
MEDICAL REPOSITORY,

FOR

MAY, JUNE, AND JULY, 1805.

*A CASE of TETANUS: Communicated by FREDERICK DAL-
CHO, M. D. Secretary of the Medical Society of South-
Carolina, to Dr. MITCHILL, April 10, 1805.*

AT ten o'clock on Thursday morning, the 8th of April, 1802, I was called to Alexander Pringle, a lad of fourteen years of age, who, I was informed, was in strong spasms. Fourteen days before, a log of wood had fallen on his left foot, and wounded the great toe on the last joint; but the contusion was greater than the laceration. It had been dressed with basilicon, and some other unctuous applications. He continued to limp about until two days before I saw him, when he again bruised the toe very considerably. Last Sunday he complained of a stiffness in the muscles of his neck. When I saw him, the muscles of his back and neck were very strongly contracted; every eight or ten minutes they were strongly convulsed, forming that symptom of tetanus usually called opisthotonos; his jaw was firmly fixed, so that he could receive nothing into his mouth but what he could suck through his teeth, and this was attended with considerable pain and difficulty, for the attempt to swallow immediately brought on the spasms; his head and trunk were perfectly rigid: he had been costive for the two preceding days, complained of considerable pain in his bowels, and had been very restless for several of the preceding nights. On examining the toe, I found the wound open, of about three-fourths of an inch in length, across the tendon of the extensor pollicis pedis longus, a little behind its insertion. The toe was considerably swelled and much bruised, no feeling in it, and the nail loose. From the putrid sanies which issued from the wound on pressure, I suspected the bone to be injured, and intimated to his mother the necessity I should be under of amputating it,

before the disorder could be cured; but she would not accede to it. His skin was dry and cool to the touch, and his pulse small and frequent. I directed an injection to be thrown up, and prescribed a strong solution of Rochelle salts to be given to him in small quantities, at short intervals, until two or three discharges from the bowels should be procured.

Having seen several fatal cases of tetanus, in which opium had been given in very large quantities without effect, I determined to give trial to wine, the success of which is recorded in the Medical Repository. I accordingly directed him to take some good Madeira wine, as often, and in as large quantities as he could swallow. I also directed a spirituous embrocation of lin. opiatum, in which was a considerable quantity of ol. rorismarini, with which his neck and throat were to be frequently rubbed, and also directed the wound to be dressed with the same.

At eleven o'clock I was again sent for, with information that the spasms recurred at shorter intervals, and with increased violence, which I found to be the case when I visited him. He had found it impossible to swallow either the wine or saline solution, and the glysters had produced no effect. I then recollected the case of successful treatment with tincture of cantharides, as given by Dr. Brown, of Kentucky, and determined upon making trial of it, as the patient could not swallow as much wine as was necessary to excite the action of the system. I directed twenty drops of the tincture to be given to him every two hours, and a strong solution of sulphate of soda to be given as an injection, as often as was necessary to produce the desired effect. When I visited him in the evening, he had taken sixty drops of the tincture without producing strangury, or any affection of the stomach or alimentary canal. The injections had procured three discharges, which afforded him much relief; but there was no alteration in the state of the spasms. I directed forty drops of the tincture to be given him by ten o'clock, which would make the whole number taken amount to one hundred drops. I also directed ʒj ung. hydrarg. fort. to be rubbed into his back, along the spine, in the course of the night. His pulse continued the same as in the morning, 120. No feeling in the toe. Deglutition difficult.

Friday 9th. On visiting him this morning, I was informed he had passed a very restless night, had been in much pain, and the spasms frequently recurrent. His skin felt warmer

than yesterday, his pulse continued the same. He complained of pain in the wound. The muscles of the back did not appear so much contracted, and the curvature of the body not so great, but the jaw was still fixed; he coughed frequently with difficult expuition. No evidence of inflammation in the stomach or intestinal canal; but some mucus appeared in the urine which he had discharged this morning. My friend, Dr. Auld, saw the patient with me this morning, and urged the necessity of amputation, to which the patient's mother would not accede. As he had had no alvine discharge since last evening, the injections were directed to be continued. A warm poultice was directed to be applied to the wound, after dressing it with the stimulant mixture. To allay the irritation of the cough, equal parts of tinct. opii. camph. and tinct. cantharid. were mixed, of which he was directed to take eight drops every two hours. At eleven o'clock I saw him again; the spasmodic contractions were violent and frequent, and he complained of some pain in the abdomen. The exertions which he made to swallow his medicine gave him extreme pain about the fauces, and generally brought on the spasms. As he thought he could take it with more ease in less quantity, I directed twenty drops to be given to him every half hour, and also directed the use of the warm bath.

At one o'clock my friend Dr. Moultrie accompanied me to the patient, when we found him just returned out of the bath, and had the satisfaction of observing that he could open his mouth near half an inch. In attempting to discharge the mucus which collected in considerable quantities in the posterior fauces, he was thrown into convulsions. His pulse was increased by the bath to 150; every twenty-fourth stroke was weaker than the rest; his skin moist and warm, bowels not so painful, as the injection had operated; he complained of considerable pain in the wound, but no pus was formed. He was directed to continue his medicine, and to take frequently a little wine. At seven in the evening, he complained much of a sharp pain over the stomach and abdomen, which produced, frequently, violent startings. These pains appeared to be the consequence of a spasmodic affection of the muscles of the abdomen, and not from inflammation of the viscera. What he swallowed he readily retained on his stomach, without the smallest inconvenience or pain; no soreness or increase of pain was produced on pressure. His pulse was frequent and considerably weaker

than in the afternoon; he had asked for something to eat, and told his attendants he felt better. No symptom of strangury. The medicine was directed to be continued until ten o'clock, but at eight o'clock he fell into general convulsions, and in five minutes died. We solicited permission to open the body, but could not obtain it.

What is remarkable in this case is, that so young a patient, of a delicate habit, should be capable of taking such an immense quantity of tinct. cantharid. without producing inflammation of the intestinal canal or bladder. On the first day he took one hundred drops, on the second two hundred and fifty, making three hundred and fifty in all, or about five drams and an half. No sensation of heat was felt in the stomach, or the slightest nausea produced. No pain in the kidneys, nor any increased secretion of urine, or pain in voiding it; on the last day of the disease a small quantity of mucus was perceived in it.

To what cause could this want of irritability in the stomach and intestinal canal be owing? Was it the consequence of an unusual quantity of mucus lining that passage, which shielded it from the stimulus of the cantharides? Or from a torpor of the stomach and intestines, which the stimulus was too weak to overcome? Or was the exciting cause of the disease still kept up by the lacerated tendon? and would amputation of the toe, by destroying the connection between the cause and effect, have disposed the system to receive the action of the cantharides? If the state of the jaw would have admitted of it, would full vomiting excited before the exhibition of the tincture have afforded it an opportunity of acting?

In the case related by Dr. Brown, in the 4th vol. of the Medical Repository, p. 339, after taking 3 iss of the tincture, inflammation was produced, which extended through the whole course of the intestinal canal, when immediately all the tetanic symptoms subsided.

The tincture which I used was well prepared, agreeably to the formula in the Edinburgh dispensatory,

A CASE of HERNIA CEREBRI, wherein a large Portion of the BRAIN was protruded beyond the SKULL: Communicated to Dr. MITCHILL by Dr. LEVI WHEATON, of Providence, (R. I.) in a Letter, dated April 24, 1805.

ON the 15th of March I was called to attend Mrs. —, in labour with her third child. Upon inquiry I learned that she had attained her full time, and that she had had regular pains for several hours. Soon after my arrival, being informed by one of her attendants, that her water began to come off, I sat down to examine her situation. Upon introducing my finger into the vagina, I discovered a large tumour resembling the ordinary protrusion of the membranes, for which I at first mistook it, notwithstanding the information which had been given me. But I was soon undeceived on this head, by the abundant escape of water at each succeeding pain, and by the more pulpy resistance of the tumour. Solicitous to procure seasonable information in the case, I passed my finger as far as possible up the vagina, and on each side the tumour, when finding the upper portion of it to have the usual hairy feel of the scalp, and the head to which this tumour seemed to be appended resting at the pubes, I felt little uneasiness for the issue of the labour, although I was prepared to expect something preternatural in the fœtus. The pains recurring at short intervals, the woman was soon delivered of a living female child.

The body and limbs of this child were well formed, and of an ordinary size; the neck unusually short; the head was less by about half its proportionate dimensions; the features tolerably regular, except a remarkable lowness of the forehead; the frontal and parietal bones appeared to be complete, and *firmly* united at the sutures; the lambdoidal suture, with the upper margin of the os occipitis, could also be distinctly traced.

The prodigious tumour which preceded the head in the birth was of an oblong spheroidal shape, and of *fully twice the size* of the head. It was connected with the occiput by a neck of about one inch and a quarter diameter; or rather, it had the appearance here of being constricted by ligature, to one fourth its ordinary compass. All that portion of the tumour adjacent to the head was covered with hair like the scalp, of which it was an evident continua-

tion, whilst the hinder portion was smooth and glossy, of the ordinary colour of the skin.

The child continued to live nearly a week, and although rather torpid, received nourishment, had the natural excretions, appeared sensible to the light, and moved its upper and lower extremities with tolerable freedom until the morning of the 22d, when it expired, after many severe convulsions.

On the third day the hinder portion of the tumour had been marked with some sphacelated spots, which separating, discharged a thin offensive matter, the intermediate surface became inflamed, and before death this part had assumed a general gangrenous appearance, the whole preserving its original size.

Desirous to be better informed of the nature of this very singular excrescence, I obtained permission to examine it, in company with an ingenious medical friend, Dr. Pardon Bowen, of this town.

Upon making an incision into the hinder part of it, about twelve ounces of a serous fluid were discharged, and upon a more complete dilatation of the sac, we discovered a large portion, as we judged, somewhat more than half, of the cerebrum covered by the dura mater; the two hemispheres, the falciform septum, and a portion of the longitudinal sinus were distinctly observable. The contents of the tumour being thus ascertained, we proceeded to make an entire separation of it from the head, which exposed to view an opening in the middle of the os occipitis of about an inch diameter, communicating below with the great foramen: indeed, the existing portion of this bone was but imperfectly ossified, and its edges at the opening were thin and cartilaginous. This aperture, from the tension and firmness of the teguments over the neck of the tumour, I was unable to discover, during the life of the child, by any pressure which my pre-conception of the contents would allow me to make.

Nature deviates from her common laws in an endless variety of shapes; and cases of monstrosity, as such merely, form, perhaps, one of the most unprofitable parts of medical reading; but some circumstances in the preceding case I think entitle it to attention. I know that hernia of different portions of the cerebrum, and some cases of deficient ossification of the occiput, resembling the spina bifida,

have been observed; but that a hernia of so large a part of the brain, with such apparent stricture on that delicate organ at its outlet from the cranium, and which had evidently existed during, at least, all the latter months of pregnancy, should be compatible with life for such a length of time, even after respiration had commenced, appeared to me new and surprising. Besides, the almost exact resemblance which the presenting part of this tumour had to the distended membranes might, in some cases, deceive the most experienced accoucheur: its publication, therefore, may serve, at least, to caution him against one other possible source of fallacy, in the exercise of a profession where mistakes are often dangerous, and always unpleasant.

A HISTORY of the extraordinary SEASON of 1804; and of the luxuriant VEGETATION, great RAINS, and subsequent SICKNESS in August, September, and October; as they appeared near the River Monocasy and in the upper Parts of Maryland. Drawn up by GRAFTON DUVALL, M. D. of Fredericktown, (Maryland.)

[Continued from p. 383 of our last volume.]

THIS luxuriance of vegetation was ascribed to the use of plaster of Paris; and it was even suspected by some that the employment of this manure might have had some effect in producing the epidemic. To those who inquired concerning the probability of such agency, I invariably replied, that it could take place only so far as it might assist in favouring vegetable growth, and not from any immediate, direct, or inherent principles of its own, at once influencing the atmosphere.

That the plaster may have contributed in a small degree to the production of the epidemic, in the manner I have mentioned, I confess I am willing to believe; because experiments have most clearly proven, that by enriching the soil it promotes vegetation, and favours the growth of whatever is sown or planted. But independent of the use of the plaster, so favourable was the season from perfectly natural causes to this result, that it cannot be properly supposed that artificial means or agents could have much influence in effecting it: for if the plaster had any direct and important agency in the cause, the epidemic must have prevailed in all places

where it was commonly used. But was this the case? I believe not; for I have been informed, that in many places which were unhealthy last fall to the utmost degree, the use of plaster was scarcely known, and that in others where the use of it was considerable, the inhabitants were healthy. This circumstance so obviously disproves the truth of the doctrine and belief I have quoted, that I think it needless to advance other arguments to show the futility of the idea that the use of the plaster of Paris corrupted the atmosphere and produced the epidemic.

But it may be asked, Why, if vegetable putrefaction be the cause which gave rise to this epidemic, it was not more general; and why the sea-ports should not have experienced it? Within the distance I have had an opportunity of inquiring, I find that in those places where the soil generally was barren, the inhabitants were not only exempted from the prevalence of the epidemic, but were, in fact, unusually healthy. In other seasons, and in other years, poverty of soil was a misfortune, as it regarded the owner's ability to accumulate wealth; the uncommon weather of this year made the same soil a blessing to those who lived on and cultivated it, inasmuch as it secured their health. I shall draw some support to this position, which I will afterwards exemplify, when I come to point out a distinction between the two great portions which form Frederick county, as divided nearly equally by Monocasy river. My principle is, that whenever the soil and cultivation of ground were such as that vegetable growth was not unusually favoured, and did not become superabundant, so as not to form so much extraneous matter as, by the power of the heat and sun, to putrefy and to corrupt the atmosphere, that in such places it was as healthy as in other years.

The rainy weather, so injurious to the health of the inhabitants of the country, assisted in preserving that of the citizens of the sea-ports. The incessant and long-continued rains* purified the atmosphere, washed their streets, cleansed their gutters, and carried off the filth which necessarily collects in large cities, into their common sewers, or into their docks, &c. For the time, and during the rains, there could be no putrefaction from vegetable matters in those places; and as there is but an extremely circumscribed growth of

* Many parts of the sea-coast had no more than the ordinary falls of rain; and this was particularly the case from the Chesapeake northward and eastward. *Edit.*

products from the earth within the sea-ports, there were not the same materials for the summer's sun to act upon. Add to this, the lands in the vicinity of such large towns are generally highly improved; they have been cleared, and being divided into small parcels, there is not so much extraneous or native matter suffered to grow, perish, and putrefy in their minutely divided gardens and fields; because, being under the highest cultivation, they are usually filled with produce for market, and being tended with care, they are kept clear of weeds, &c.

In many places of our county it was no uncommon complaint that a strong, disagreeable, offensive odour was constantly perceivable. This must, doubtless, have originated from putrefaction. Every house-keeper must have remarked how very subject to rot were the culinary vegetables, and how rapidly the process took place. I have seen many large baskets full of putrid cabbages (both heads and leaves) and other kitchen vegetables, collected and thrown out of a garden, morning and evening, daily for a considerable time.

On this part of my subject I need not, I think, dwell any longer. That there was an unusual growth of every product of the earth all must admit: that this growth was favoured and brought on by the rains which fell in the spring months is equally evident: that the vitiation and corruption of the atmosphere was formed from putrefaction, by the action of the sun on this superabundant vegetable matter, in my opinion, admits not a doubt.

Having thus traced to their sources the causes of the late epidemic, I will now endeavour, in the most brief manner possible, to make you acquainted with the general situation of our county, its soil, mountains, water courses, &c. &c.

Frederick county is rich in soil, and very populous. It is bounded on the north by the Pennsylvania line; on the west by a line drawn on the top of the South Mountain or Blue Ridge, which separates it from Washington county; on the south, for the greatest part, by the Potowmac, and also by the dividing line between Montgomery and Frederick; and on the east by Montgomery, Ann-Arundel, and Baltimore counties. Fredericktown possesses nearly a central position in the county; Carrol's creek runs through and borders it: it is a large manufacturing town, and is equi-distant from the cities of Washington and Baltimore, lying in latitude 39 deg. 26 min. N. longitude 2 deg. 19 min. W. from the meridian of Philadelphia, from which it lies 142 miles in a direction

S. W. It is a town regular in its streets, and generally well built. Upon the small stream I have mentioned, both above and below the town, are numerous large and highly cultivated meadows. It is situated in a plain, extending from the Potowmac to Pennsylvania, having the Catoctin mountain four miles at the nearest point to the west, and Monocasy and its high grounds from two to four miles to the east.

The body of the county is nearly equally divided by the Monocasy, from its mouth, towards the south, to its headwaters from a northern direction. The easternmost part is, in general, not of so rich a soil as the western, although we very frequently find rich land about the smaller water courses which enter into Monocasy, as Bennett's creek, Bush creek, Linganore, Israel's, Pipe creeks, &c. on the eastern side. The proportion of lime-stone land in this part of the county is very inconsiderable in comparison to what we find on the western side. There is, however, some of this kind of soil within a mile or two of Monocasy, and between that river and Israel's creek, and a good deal of it is to be found in some of the districts in the N. E. corner of the county. The greater proportion of this part of the county was free from the ravages of the late epidemic, more particularly in the lower part of it, which was peculiarly healthy, being that part bordering upon Montgomery county, which is uncommonly hilly, uneven, and barren, and in which also is situated the Sugar-Loaf mountain.

The western part of Frederick county, as divided by Monocasy, is again sub-divided into a plain and a valley on the east side, on the west by the Catoctin mountain, which runs through the county in a line nearly north and south, from the Pennsylvania line to the Potowmac. The plain, for the most part, abounds with lime-stone, and is considered the richest and finest land in the county. It is generally finely cultivated, and is extremely productive. The land in the valley between the Catoctin and South mountain is pretty much broken; but the soil is strong, and is supposed to be better adapted to the growth of wheat and tobacco than the lime-stone land on this side of the mountain.* It abounds with the white flint-stone, and a roundish, rather soft, and blueish stone, which in no manner resembles slate, however,

* This tract of country is finely watered by Big Catoctin creek, Little Catoctin creek, and other branches of creeks emptying directly into the Potowmac. The Great Catoctin creek waters the valley to a considerable extent. Its course is bold and rapid, soon filled and as rapidly emptied.

commonly called amongst us mountain-stone and iron-stone. The plaster of Paris has been found to fertilize this kind of ground in an amazing degree, and large quantities have of late years been used on it.

Our mountains have been chiefly reserved for wood, so that as yet they are not much cleared for cultivation, although you occasionally meet with tenements and plantations on them. These situations in former years have been remarkably healthy; insomuch that many families residing thereon had never experienced the necessity of employing medical aid, except in cases of accident, as fractures, dislocations, contusions, &c. During the late prevalence of the epidemic, however, they were unhealthy to the last degree; and although it did not begin to rage *in the very first instance* in these elevated situations, it certainly *soonest became general* amongst them. It is of importance to notice this particular circumstance, because it shows very reasonably the fact, that when an epidemic is about to prevail, it as soon affects those who inhabit high lands and elevated spots as those who live in low grounds and plains; and because it tends clearly to prove that an impurity of atmosphere is formed by miasmatic particles *floating* in the air, equally liable to be deposited on hills as in vales, and to generate disease as quickly on mountains as in marshes. You can yourself judge how far this principle is correct, in contradistinction to the opinions of such writers as believe that the injurious effluvia producing disease are incorporated with and become a constituent part of the atmosphere.

This brief account of the situation and the general face of our county, and the quality of the soil, will enable you, I hope, to account for and detect more clearly the causes which gave birth to the epidemic.

I will now proceed to give you a concise account of its rise, progress, and termination, as well as the method of cure which generally obtained amongst the faculty. I have already premised that our spring, although cool and exceedingly wet, was very healthy. The rains, which commenced early, continued until late in the spring, and even with dry intervals, until some time in the summer, and destroyed, as I before mentioned, almost all the hay which had been mowed during the flattering periods of sunshine. The grain in the fields was laid down a great deal by the weight of the falling rain, and rendered difficult to be cut. Those rains took place a very few days before its ripening.

About the latter end of June, the weather became uniformly clear, dry, and warm. The grain ripened rapidly, and was fitted for the sickle early in July, which is the usual time when harvest commences with us. At this time, and during the period of harvest, our citizens were healthy, although the heat of the weather was almost insupportable. There were more instances of persons overcome with heat in the harvest-fields than I recollect ever to have heard of in one season: several in this neighbourhood fainted, and I heard of two or three instances (or probably more) where instant death took place from the overpowering heat of the sun, and other causes.

As yet but few had complained of any thing more than what excessive warmth and fatigue had produced. In August the weather continued extremely warm and dry; and early in this month it was that the epidemic made its earliest inroads. The first few cases came on, as precursors, with slight symptoms, which were easily checked by medical remedies. From this period of time until late in October it continued to increase, until it became, I had almost said universal, but at least, more than general in that part of the county west of the Monocasy. Its first appearance was in the plain below and about the foot of the mountain; but it did not, as I before said, so soon become general as on and beyond the mountain (Catoclin), and in the valley between that and the South mountain. At first I was inclined to the belief that our town would not be extensively visited by this disagreeable and unwelcome guest. But in this I was mistaken. It made its way into the town in September, and by the latter end of that month, almost all our citizens had felt its power. It fell with the most severity upon the poor; for although it did not discriminate in its attack, it appeared that those who enjoyed the comforts, not to say luxuries of life, passed through it with more facility, and bore the burthen better, than those who, independent of the disease, had the evils of poverty to contend with. During the prevalence of all great epidemics, I find, by reading, that the poor suffer most. It is not necessary to my purpose to account for the fact in this place—a slight reflection on this subject must immediately present to every mind the obvious causes. Why it prevailed in town, at a period rather later than it came on in the country circumjacent to it, I know not, nor do I think it, at present, worth while to inquire; but it was evidently the fact.

The epidemic did not extend its presence so as materially to affect the inhabitants on the east side of Monocasy; who, on the contrary, preserved their health in a degree superior to what was common in preceding years. In a few places only, and to a very circumscribed extent, did the disorder prevail.

It is worthy of notice, and it is a remarkable fact, that people residing *immediately* on the banks of the different large water courses, as the Potowmac, Monocasy, &c. were not as subject to the remitting and intermitting types of fever as was usual in former years. Scarcely an instance occurred (and if there did one occur, it either passed off almost unperceived, or at least without any bad effect, or was instantly checked or cured by an emetic) of any one's being attacked who resided in such places as I have mentioned. Indeed, such persons, considering their state in *common* seasons, were astonishingly healthy. This is easily, I think, to be accounted for. Although the vernal rains were incessant, they never raised the waters over the banks of those rivers, and, of course, brought upon their bottom lands no matter whence effluvia might arise, infect the atmosphere, and excite disease. In former years, it was common for the banks of the Potowmac, Monocasy, &c. to be overflowed, and an immense quantity of mud, leaves, and other trash to be deposited in the bottoms. Upon this heterogeneous mass of matter the rays of the sun acted, health-destroying miasmata were raised, and the air corrupted.

It is true, that in a former part of this letter, I remarked that the Potowmac, at one time, was raised to an uncommon height over its banks: But this was from rains beyond our mountains; it was *in the summer*, and at a time at which it was never known by the oldest liver on it, to be so high before. The bottom lands were in full cultivation, and the sun was powerful enough, *at that season*, to dissipate or destroy the germs of disease which lurked in the deposited trash, by immediate evaporation, and consequent dryness. This process of immediately drying up the moist matter capable of impregnating the air with deleterious particles having taken place, we found that this great inundation could have no influence in promoting the epidemic, or extending its reign, as we still found the inhabitants upon and nearest to the rivers healthy, whilst those at a greater distance were remarkably unhealthy.

Like time and death, this epidemic paid no respect to

persons. The infantile, adult, and aged periods of life, were equally subjected to it, although a few slight shades of difference in attack, severity, and long-continuance, as in all other diseases, were discoverable. Neither did it make any discrimination between the sexes. If there were any stages of life upon which it fell with more severity than others, they were the infantile and aged; robust persons suffered much, and I think also pregnant women.* If there were any classes of people who could be said to be *in any degree* exempted from attacks of this epidemic, they were the delicate in health and constitution from natural causes, habitual drunkards, and negroes. These last certainly did not suffer as much as the whites; the disease was very rarely mortal amongst them; and when they did sustain an assault from it, its duration, was generally short, and it was easily repelled.

The earliest general symptom which I noticed, and which was a very severe one, was a pain in the bones, not particularly confined. It sometimes came on in the legs, the

* I might also add Physicians, for scarcely one of them escaped. This, however, may be easily accounted for; their exposure to sun, night air, fatigue both of body and mind, &c. all contributes to render them more liable indeed to be affected than others. The poor also, as I said before, suffered much. An eminent Physician of this place, to whose experience, judgment, and opinions I pay just deference, differs with me in supposing that pregnancy had any influence in subjecting women to be attacked. If, however, it did not dispose them to be affected, it certainly tended to place them in a more dangerous situation than they would otherwise have been when affected. He says that in the course of his practice, he did not observe the disease to affect his pregnant patients to any material disadvantage. He saw but one or two cases of abortion, and as many of premature birth. This number I consider as large when added to other cases under the attention of other Physicians. I heard of several cases of abortion and immediate death. It is true, that in some of those cases, emetics were exhibited by the request of the patients themselves, and it is possible that their operation under other and common or natural circumstances might have been as fatal; but it is not likely, because we every day almost see pregnant women take emetics by medical advice, for stomachic derangement or disorder, with perfect safety, and without dangerous consequences. But my idea on the subject is, that the presence of the disease rendered the uterine system more irritable than natural, and disposed it to be more easily acted upon by stimulant remedies. Lying-in women affected with it escaped with the utmost difficulty, as I observed in several cases.

In common practice we sometimes see the most delicate females in pregnancy labour under violent dysentery, and take emetic after emetic and cathartic after cathartic, and no injury follow. They will go through this violent disease, and use all the drastic medicines which are sometimes necessary for the cure, and not suffer abortion, which seldom takes place in the disease. But I ask, can they do this when diseased of plague or yellow fever? Let experience answer, and she will tell you no!

hips, the back, the arms, the shoulders, more often however in the legs and fore-arms. It reminded me of the *break-bone fever*, mentioned by Dr. Rush. These pains generally announced the approach of disease on the first attack, and of the exacerbations afterwards: they went off on the arrival of fever, and remained absent in the remission or intermission as the case was. They acted as a sentinel stationed to prevent surprise.

Pain in the head was an almost universal symptom, depending apparently on the vitiated condition of the stomach. Many complained bitterly of it, as affecting also the forehead and the eyes. The seat of this pain was also frequently in the occiput. It sometimes continued even to a violent degree, after every other symptom of disease had disappeared, and until the patient could take his accustomed exercise, and had his appetite entirely restored. At the time I had the disease, it invariably came on after my feeling the pains chiefly in the legs, with sick stomach, followed by a chill or ague: when this was about going off, I generally vomited two or three times; the fever acceded, and when this remitted or intermitted as the case might be, the head-ach came on; or if it did not just then come on, I felt it at this time in an infinitely more sensible manner than at any other time. This was somewhat extraordinary; but I accounted for it by supposing that at the time I laboured under fever, oppression of the præcordia, &c. I was not so sensible of the head-ach, particularly as the pain of it was swallowed up by other more distressing sensations; but that as soon as these went off, the head-ach was left alone to be felt. *In no one instance did I see blood-letting entirely relieve this symptom.* It increased its violence manifestly in my own case. Whenever it continued after convalescence, I was inclined to suppose, that faults still existed in the stomach or bowels, and therefore prescribed an emetic or cathartic instead of bleeding or blisters. Unless there had been due evacuations from the stomach and bowels, and an entire new and brisk action of the system generally, blisters did not produce the good effects of relieving the patients from pain; but after these were obtained they acted well. Cataplasms to the soles of the feet were very happy in their operation to relieve head-ach.

In the first instances the disease generally appeared in the remitting form. It afterwards changed to an intermittent, which sometimes continued for many weeks. With the pre-

cursors I have mentioned, the epidemic complaint was ushered in by nausea and chill, followed with a fever of about twelve hours duration. While the disposition of the system which formed this type of fever remained, the paroxysm took place regularly every day in this manner, and so continued until checked or changed by medical remedies. In many instances an *ague* seized the patient instead of a *chill*. After an illness of several days, we generally found an intermission to take place, and the disease assumed the garb of a complete tertian, having an interval in which the patient was free of fever for thirty-six hours. I shall hereafter mention the peculiarities which characterized it, in its manner of attack, its duration, &c. The head-ach continued even after the intermission took place, and sometimes after sufficient evacuations were had, so that it formed no obstacle to the exhibition of bark and other tonics which were necessary for the cure; which were prescribed; and which, with exercise, &c. had a successful effect in removing this unpleasant symptom.

The disease observed no precise period of attack. In some an *ague* or chill came on, without any previous symptom indicative of its approach. Many were attacked immediately after eating a hearty meal, as at breakfast, dinner, or supper; and I saw several cases in which the first attack and succeeding paroxysms were sustained in the night.

The stomach, in this disease, appeared to me to be more affected than any other viscus. It superabounded in bile, as was discovered by spontaneous vomiting in most instances; which continued even until health was almost restored in a few cases. Every paroxysm of the disease was accompanied with nausea and vomiting in a greater or less degree. Many complained of pain in the stomach, and I saw one case (a young lady) in which this pain was so intolerable, as to produce a complete fit of hysteria and low spirits: two bleedings, laudanum and asafœtida relieved her. Spontaneous vomiting having taken place, succeeded also by diarrhœa, the pain in the stomach abated. These took place immediately after having been bled. In most cases there was a great irritability of the stomach. The lightest diet would oftentimes be rejected even after fever was removed. It was a difficult matter to affect the bowels with purgatives, unless much puking had been previously provoked, because no formula of medicine scarcely could be retained on the stomach long enough to act as was desired. I saw, how-

ever, several cases in which there was a great insensibility, or want of the irritable principle in this viscus. In two of these cases I could not produce vomiting, although I administered the most powerful and active emetic medicines I could think of, even until I was fearful of having gone too far. In the same cases I found great difficulty in exciting purging. The patients, however, recovered without the assistance of medicine.

Many were relieved, I believe, from an attack of the epidemic by spontaneous vomiting. It appeared to be an effort of nature to free herself from morbid matter. Great quantities of bile were evacuated in this way, and sometimes with an obvious relief and mitigation of the symptoms ushering in the complaint. The first efforts to puke usually brought up the phlegm, mucus, water, &c. in the stomach, and afterwards a dark green bile was discharged by mouthfuls at a time, and extremely tough and viscid; yellow bile, very disagreeable in taste, followed this generally. These spontaneous vomitings often occurred, more particularly after a chill or ague. In this stage of the disorder it was very often excited by the plentiful draughts of cold water which the patient took to assuage thirst. Such vomitings always brought up whatever had been eaten or drank by the patient during the preceding twelve or twenty-four hours; much bile, too, followed, for it appeared as though it were impossible to exhaust the stomach of this matter, so quickly and so abundantly did it collect. I did not witness a single case of genuine black-vomit, although I frequently heard of matter of a dark colour being discharged from the stomach. In several instances I witnessed the discharge of a dark brownish dirt-coloured fluid, which by no means resembled the black-vomit, according to the idea I have of it, having never myself seen a case of the kind.* During the time I had the disease in question, I took three or four emetics.

* A very intelligent gentleman in this town, a great part of whose study is in the science of medicine, whose family and himself suffered severely during the epidemic, informed me, that he thought his lady had the symptom of *black-vomit*. He says the matter discharged was black, and exactly resembled *coffee-grounds*. She lingered a great while, and is scarcely recovered now. The attending physician told me, that during his visits the circumstance had never been mentioned to him. This was the only case, tolerably attested, which I have heard of. Nurses often spoke to me of discharges of *black-coloured stuff*, &c. but I always made much allowance for exaggeration and the influence of surprise or unacquaintance with such phenomena.

After having taken the last, and it had operated two or three times, throwing up but a small quantity of bile, I was seized with a most deadly sickness at the stomach, immediately followed by a discharge of a *light pink-coloured* fluid, somewhat turbid, of uniform colour and consistence. In the course of a few minutes more I had a second discharge of the same matter, differing in no particular from the first, and accompanied with the ejection of nothing beside either bilé, mucus, or phlegm. In those two pukes I must have thrown up not less than twelve or fourteen ounces. After the second discharge I experienced very great pain in the bowels, which went off after several very acrid and painful faecal evacuations.*

It might be said that the *bowels* were much affected as long as the disease continued in the form of a remittent. I noticed, however, more inconvenience to patients from costiveness when attacked by the intermitting type.† In such cases a symptomatic cholic would sometimes occur. I saw some instances where diarrhœa came on after spontaneous vomiting—it was favourable. One of my patients, during convalescence, after a severe illness, discharged from the bowels a large quantity of a whitish fluid, almost without smell; during the time she had much tenesmus

* I mentioned this appearance of part of the contents of my stomach to an experienced and judicious Physician, who supposed that the colour proceeded from a very small proportion of blood oozing from a minute vessel in consequence of straining to puke. I did not coincide in opinion with him, because it is not probable that blood would so completely diffuse itself throughout any fluid body whatever; because it would have formed in part into minute coagula, or into string-like appendages or lines, and because it is likely that the two discharges would have differed somewhat in appearance, either as to colour in higher or lighter shades, or in consistence or turbidness. Besides, the smallest portion of blood which would be burst from its vessel by straining, must have given more colour to the discharged matter than it had. I might add, that I puked easily and without straining; but I know that this circumstance would have no weight, inasmuch as a person might in one week puke with difficulty and straining without rupturing a blood vessel, and in another week have a vessel ruptured without severity in these causes.

† That is, *more pain*; the costiveness in the remitting fever increased the head-ach very much, and heightened the fever; but when costiveness continued during the prevalence of the intermittent form of the complaint, it much more often produced the symptoms of cholic. The stomach and bowels certainly appeared primarily and more importantly to be affected than any other of the systems of the human body. Indeed, I think that this may very properly be called the “seat and throne” of the epidemic. This, however, is certain, that the most successful method of cure was that which was directed to the reinstatement of the stomach and bowels from the derangement occasioned by the presence of the disease.

and pain. She sometimes thought she discharged a pint at a time; at others very little: every discharge was accompanied with severe pain, which vanished after each discharge, and recurred again in a short time. These discharges were repeated as often as every half hour from five o'clock in the evening to twelve o'clock next morning. They weakened her so much, that she declined taking either an emetic or cathartic which were proposed. The affection went off spontaneously, and the patient recovered rapidly. Dr. Rush, in his history of the Yellow Fever of 1793, mentions several similar cases, and supposes that the bile was so impacted as not to be discharged in sufficient quantities to colour the fæces. I think this is the proper explanation.

The blood vessels very rarely gave useful hints in directing the method of cure, unless in extreme and unusual cases, as old age, habitual drunkenness, pregnancy, &c. Generally more attention was paid to the symptoms depending upon the state of the stomach and bowels. The pulses were, for the most part, quick, soft, irregular and small; they were rarely hard or tense. For the number who sickened of this epidemic, very few, comparatively, were blooded; seldom, indeed, was blood-letting necessary a second time in the same case.

The brain was supposed to be affected in one or two cases which I heard of. I saw one case of syncope, delirium, and almost total insensibility in an old gentleman, who had laboured under the influence of the complaint for several days, but considered himself not so ill as to require medical assistance. He was walking in his back yard when the fits overtook him. I saw him in fifteen or twenty minutes after he was carried into the house, with some symptoms of apparent oppression of the brain, stertorous breathing, and foaming at the mouth. His pulses, although full, were not hard or corded. I drew sixteen or eighteen ounces of blood from the arm without any appearance of relief; epispastics and sinapisms were applied; the action of the latter of which, on his soles, first produced signs of feeling and uneasiness. As soon as it possibly could be forced down his throat, I also prescribed an active mercurial bolus, to which I added a portion of camphire; the combined and successful operation of all these remedies recovered his speech in seven hours, and I had the pleasure the next day of seeing him able to sit up in his bed, and the day after to walk about his room.

Whether the liver was much affected I cannot say. I did not see or hear of a single dissection during the reign of the epidemic. We were entirely dependant upon *outward* symptoms to judge of the diseases and affections of this viscus. But inasmuch as the secretion and excretion of bile appeared to be extraordinarily great, the presumption is that it must have been in some degree affected. I have as yet heard of no case of inflammation, suppuration, or abscess. I saw no case of great pain about the region of the liver. The lungs remained unaffected, as far as I could judge; nor did I see a single case of cough, which might be justly said to be an attendant on, or symptom of the disorder.

The disease acted upon the skin to an uncommon degree. It was always very hot and dry about the commencement of a paroxysm; but became relaxed, moist, and even cold as the fever abated. This evacuation by the pores was never critical; nor could I ever discover any benefit to be derived from its quantity, for the same appearance took place at each succeeding paroxysm, and continued sometimes long after fever was gone: at this period it was debilitating, and required powerful tonic remedies and exercise to remove it. In many this inordinate perspiration was fetid; it communicated a sour smell to the body and bed-linen, which were often necessarily changed every day. The skin was tinged with bile in very many instances, and the countenances of those who had been severely afflicted by the epidemic, were, for a long time after convalescence, known by the peculiar *yellowish white* colour which they exhibited. The impression on the tongue of the perspirable matter of the skin was of a sharp, saltish taste. In the case of a woman who had laboured violently under the disease from Sunday until Thursday noon, when I first saw her, the skin was remarkably cold, particularly on the extremities. *Her pulse indicated no danger*, for it was uniform, slow as natural, and could be said to be neither low nor full: almost every other symptom foreboded death. She had not been evacuated by medicines of any kind. In this situation I thought that if the energy of the system (at least so much as remained in spite of the disease) was roused and brought into action, those untoward symptoms might be removed. An emetic was immediately given, which operated successfully, and was followed by a mercurial cathartic, which was equally happy in its effects on

the upper Parts of Maryland, in 1804.

Friday. Her skin was as warm as natural after this, and continued so until **Monday**: her husband rode into Washington county on that day to consult a German quack on her case, from whom he received some medicine. I shall only add that late on Tuesday night she died.*

In many an eruption took place on the skin, very much resembling erysipelas. In some there were red, hard, and inflamed spots, rising into small circumscribed tumours, resembling the stings and bites of venomous insects. This was eminently the case in the old gentleman whose case I have already mentioned. This eruption was attended with violent itching, and remained for several days, then disappeared, leaving a scaly and rough surface until every trace of it vanished. This symptom always appeared after convalescence, and was considered very favourable. Whenever it disappeared suddenly or prematurely, it invariably brought on sickness and irritation in the stomach.† Its presence did not forbid the exhibition of bark in the intermission of fever. Some complained of severe disagreeable itching in the skin over the whole body, without any discolouration whatever: a few had a breaking out and swelling on the lips, and the lips of some became scabby, who had but one or two fits of fever: this was rarely seen amongst those who had been violently sick, or were affected for any length of time. This eruption, however, we see almost every day in persons who, having had a slight fever in the evening, will find a sore mouth the next day.

I saw not one case of glandular swelling. I heard of very few cases during the prevalence of the epidemic of such an affection. Such as did occur soon declined and dis-

* There is every reason to believe that this woman might have been now living in the midst of her family, had professional aid been continued. I saw her but once; and even then her husband was reluctant that I should visit her, although only five miles distant. He only came in, he said, "to get a little something to warm her blood, it was so cold!" I refused to prescribe for her unless I saw her, and explained to him her situation, and the danger she was in. I was not called on afterwards. She died delirious.

† This may be properly termed a symptomatic erysipelas; and from the well known sympathy which obtains between the stomach and the skin, I am led to believe that this eruptive affection is more often dependant upon a vitiated state of that important viscus, the stomach, than is generally imagined. I have a long time thought so, and by accommodating my remedies to this idea, in cases where the pulses do not show strong arterial action, and where much febrile appearance does not exist, I have removed it without bleeding, purging, fever medicines, or lotions.

appeared. I did not learn of a single case wherein suppuration took place. The disease was not so violent.

The disease terminated in nervous symptoms much less often than might have been expected. I have mentioned one case of convulsion with recovery, and another which ended fatally in delirium. I saw a fine boy of eight years of age three hours before his death, who had only then been complaining and laid up twenty-four hours. The day before he was taken he had used too much exercise in running about his father's farm yard, partly in a rain. He complained next day; had a slight chill and fever, which continued all night: at twelve o'clock next day his parents endeavoured to puke him, but without effect: at six in the evening I saw him; he had taken ʒi of vin. antim. and grs. iij. of tart. emet, without puking him. Whilst I remained he was seized with inability to retain urine and fæces; became comatose; was laborious in breathing, and died at or about ten o'clock. His pulses were undulating and indistinct. I supposed that extreme heat from violent exercise, and consequent cold from the rain, had entirely disorganized or wasted away the excitability of his system, and produced the same effect, in a partial degree, which lightning would have done.

Delirium, in most of its shades or degrees, attended in many cases, more or less. *It affected more in the absence of than during fever.* A great prostration of muscular strength was experienced by almost all who were diseased. Trembling ensued in those cases which terminated in nervous symptoms. These, in several cases which I heard of, were very alarming. Temporary mania, convulsive catchings of the hands and feet, &c. were included in the list. I need not particularize the symptoms in these stages of the complaint, because they are the same as those proceeding from other forms of disease.

Despondency of mind and low spirits were almost invariable attendants on the disease. Many supposed that life must be resigned in every succeeding paroxysm. The anxiety and oppression of the præcordia were unusually great and distressing. The fear of death predominated over every other consideration.

The secretory organs generally were stimulated. The bile, urine, perspiration, saliva, &c. were all secreted and thrown out in increased quantities. The bile assumed many appearances, as I have formerly mentioned: a dark

green and brownish colour, and great viscosity, more often than any other appearances, however, characterized it. Its dark colour was, I believe, oftentimes mistaken for blackness in sick rooms. In most instances it was extremely acrid, and its removal from the stomach and bowels, either by natural or artificial causes, gave great pain; in some cases it produced tormina of the bowels. To soothe pain, and to endeavour to sheathe the intestines from the acrimony of the bile, I was very frequently obliged to administer mild oleaginous purgatives (frequently repeated), in preference to mercurial cathartics, which were, without a doubt, the most beneficial in every stage of the disorder.

The stomach and its glands secreted and threw up other matter and substances, an instance of which I have given, which could not be well defined. I myself saw such bodies thrown up frequently, and was unable to account for their presence or formation. They may have been compacted bile, having its colour changed by acrimony, disease, &c. but I confess I never felt the disposition to examine them more minutely than by eye-sight.

The *fecal evacuations* were generally large in quantity, and excoriating to the rectum, after costiveness had continued for a few days. The proportion of bile, in most cases, was unusually great; and the colour depended chiefly upon the state of this excretion. When brought on by purgatives, the feces were of a blackish green colour in the first instances and during the height of the remittent fever, but always became more of a natural colour in proportion to the number of emetics and purges exhibited, and to the violence or abatement of the disease. In a few instances they were extremely fetid, particularly in spontaneous diarrhœa, which sometimes took place after vomiting, in the early stages of the complaint. I saw several cases of complete cholera morbus, wherein this symptom first ushered in the disease. It would be almost incredible to mention the number of discharges, either by stomach or rectum, which were excited by a single emetic or cathartic in some persons. A patient of mine (a small boy) took, by my advice, about ʒss of vin. antim. which puked him incessantly for six hours: he had great pain in the bowels until the operation of the medicine reverted upon them, when it purged him very much: his pulse continued almost unaltered; in consequence of which I determined not to check the evacuation, as he had been several times complaining,

and it was difficult to prevail upon him to take medicine. This severe operation produced a complete intermission from fever; and a few doses of bark restored him.

The *urine* was discharged frequently and in large quantities. It was generally of a pale colour and without smell. It was rarely high-coloured, and then only in obstinate cases of violent fever, with a tendency to inflammation, of which there were but few.

(*To be continued.*)

FACTS concerning the SLABBERING DISTEMPER in HORSES and other DOMESTIC ANIMALS: In a Letter from THOMAS MOORE, of Montgomery County, (Maryland), Farmer, to Dr. MITCHILL, dated Brookville, 22d Feb. 1805.

AGREEABLY to thy request, I shall endeavour to give a concise history of the slaving disease of horses, kine, sheep and hogs, which has, for some time, existed in this country, conformably to the facts which have come under my observation.

Late in the summer of 1795 I was told that the grass from a certain lot in the neighbourhood produced a remarkable defluxion of saliva from the mouths of horses: Soon after harvest, in the year 1796, I discovered something of it on my own farm, and was told that it had appeared on several others. In the course of a year or two more, it became general throughout the neighbourhood, gradually increasing in its effects, and beginning earlier in the season every succeeding year, until about the year 1802, since when it appears to be nearly stationary. It now commences about the last of the fifth month, and continues through the summer and autumn. It was not discovered for some years that any other animals than horses were affected by it, nor was their health supposed to be materially injured; but at length kine, sheep and hogs began to be sensibly affected, and it was found that horses would *actually die* if confined to the grass of certain fields without any other food.

The calamity now assuming a serious aspect, my attention (as well as many others) was turned towards a discovery of the *cause*, in hopes of being thereby enabled to take such measures as would lessen the *effects*. Red clover being the grass most commonly used for green food on many farms, an opinion very early prevailed, that the introduction of *this grass* had produced the disease. To this opinion, how-

ever, I could not subscribe, having frequently observed that the disease was produced in as great a degree by the grass of some fields where there was not a plant of clover to be seen as by any other; and, on the contrary, I found, by inquiry, that the disease was then unknown in several parts of Pennsylvania where red clover had been much longer in use than with us. But from observing that a small hard-stemmed grass generally made its appearance about the time the disease began, I (with many others) was led to believe that this grass was the cause; and, in order to ascertain it, made the following experiments: I picked over about seven pounds of red clover so carefully that I knew there was not a blade of any other kind of grass amongst it, and gave it to an hungry mare, entirely free from disease. In one hour after eating it, I was surprised and disappointed, by finding the disease to be excited in a considerable degree. The mare was then kept on dry food until she was again freed from disease, and an experiment made on the small grass before spoken of, the result of which was the same. Similar experiments were afterwards made on several other kinds of upland grass, and always with the same result. We also find, that any kind of grass which will produce the disease in its green state, will produce nearly the same effects when dry. In the course of the last two years it has become general throughout a district of country of some hundred miles in extent: and although I have yet heard of but few places where other animals than horses are materially affected by it, yet, from the increasing effect on them, and the rapid spread of the disease, it is to be apprehended, that the time is fast approaching when it may be considered among the most serious calamities with which this country has been visited.

The symptoms in horses are a constant discharge of a watery fluid from the mouth, (probably to the amount of several gallons in twenty-four hours) without any apparent inflammation of the salivary glands, great thirst, dulness, loss of flesh, always exhibiting the same sunken appearance in the flank as an animal that is almost famishing for food: after some continuance of these symptoms, comes on a stiffness in all the limbs, which altogether continue till death. In other animals the symptoms appear to be nearly similar, though less in degree. Milch cows suffer a considerable diminution in the quantity of their milk, and still greater in quality, so that the profits of the dairy are much

lessened. Dry cattle require a much longer time to fatten; and, indeed, on some grounds, can scarcely be fattened at all. Hogs are not perceivably benefited by any grass which produces the disease in considerable degree. Sheep do not suffer as great inconvenience from it as any of the three last mentioned animals, yet they are sometimes very sensibly affected.

From some late observations I am inclined to believe, that if hay be put in bulk in such an uncured state as to cause it to pass through a very strong heat, the pernicious effect will be nearly destroyed; and if on further trial this proves to be the fact, may it not, in conjunction with the two following, to wit, that the disease is confined to uplands, and that ploughing generally eradicates it for at least a year (being always worst on grounds which have lain long in grass), afford something like a clue to unravel the mystery? Low grounds being, as far as we know, entirely exempt, looks like the exercise of animal instinct in regard to situation: and the effect of the plough to remove the cause for a short time, and the same afterwards gradually increasing, favours the supposition of the existence of an *insect* which may in some way produce the disease; perhaps by either an *excrementitious* or *ovarious* deposition on the grass, the qualities of which (particularly if ovarious) would probably be much changed by the degree of heat before mentioned. But I do not believe that any such deposition has yet been discovered.

I remember, in one instance, to have observed a reddish appearance produced where the clover from a horse's mouth was dropped on purple cloth; hence may be inferred the presence of an acid of some kind.

In the foregoing statements I have related the facts nearly as they came under my own observation, with respect to the order of time; but, on conversing with some old observing men, I find the disease is not *entirely new*, but that the second cutting of grass, in several places, has for many years been known to produce the disease in a very slight degree; yet so inconsiderable as not to excite serious attention.

These are the principal facts which have come to my knowledge relative to this extraordinary disease; and these, I hope, will be sufficient *to insure the subject a scientific investigation*; for surely that man will deserve well of his country, who, *by developing the cause*, will aid us in our endeavours to overcome the calamitous effects.

**CASE of an extraordinary DISEASE of the INTESTINUM
RECTUM and BLADDER: Communicated to the Editors by
Dr. SAMUEL AGNEW, of Gettysburgh, Pennsylvania.**

APOLOGISTIC exordiums have become so much a matter of course, especially from the youth in literary correspondence, that we are rather surprised than otherwise not to meet with them. This practice, no doubt, might have originated from a laudable spirit of modesty, but has been perpetuated more from a desire to flatter the public into a good-natured acceptance of the communication, than from its primary cause. But as this species of artifice will not answer its purpose, when addressed to you, I submit the disposal of this paper to your competent and impartial judgments. My design in the present communication is to give a simple detail of what was to me an extraordinary affection of the human system. I conceive, however unfortunate the issue of such cases may be, it is still a duty incumbent on us to afford an opportunity to others of improving on our defects, and thereby to advance the cause of science, and the interests of humanity.

On my first discovery of the intricacy and novelty of this case, I was induced, from reasons assigned hereafter, to address a letter to Dr. Rush, requesting his advice, together with that of some surgeons of eminence in Philadelphia. My letter contained, after some prefatory remarks, the history and statement nearly as follows.

" Gettysburgh, (Adams' County) April 14, 1803.

" BENJAMIN RUSH, M. D.

" SIR,

" On the 16th of January last I was called to see a gentleman in the country, aged about fifty years. He informed me he had been indisposed for more than twelve months, but never thought proper to make application for medical assistance, as he still hoped to become better. He had experienced, at different times the preceding summer, pains in his bowels, and sometimes a concomitant diarrhœa. His pains latterly became more frequent and severe, shooting, as he expressed it, through the lower part of his abdomen and loins; his bowels were irregular, his appetite impaired, his spirits depressed, pulse low and feeble, and his whole sys-

tem reduced and debilitated. The night preceding my being called he had a very severe attack of pain. Upon making every possible inquiry respecting his former mode and habits of life, as well as the commencement, progress, and symptoms of his disease, I could not ascribe his present indisposition to a more evident cause than a want of tone in the first passages, a consequent indigestion and flatulence, to which last I ascribe the cause of pain. I accordingly prescribed such medicines as are generally found effectual for the removal of this disease. Particularly I administered copiously the Peruvian bark and rust of iron, together with directions for a proper attention to his aliment. I likewise gave him mercury, with a design of charging his system; but did not succeed so well as I desired, owing to his timidity and aversion to medicine. I persevered in this mode of treatment, with some variation, for several weeks, and it was attended with an apparent alleviation of his disease. However, after the expiration of several weeks, on the tenth of March he sent for me, by his son, informing me of a suppression of urine and considerable pain. I was unable to see him that day, but sent some nitre, with directions to use parsley-tea plentifully, and promised I would see him the next morning. The next morning I found him relieved from the suppression of urine, and pretty free of pain. He informed me he was troubled with a tenesmus when he had the suppression, or any symptoms of ischuria.

"It may be proper to remark here, that while he was using the stimulating and strengthening medicines, the hemorrhoids made their appearance, with considerable pain, tension, and swelling around the anus. This was the first time I became acquainted with this disease having been a former unfriendly companion of his. He informed me he had been subject to them formerly for a number of years, but that latterly they had not afflicted him for a considerable time. I ordered mild laxatives to accompany the use of his other medicines and he soon became relieved of them. After my last visit, I was disposed to ascribe the pain and difficulty attending the urinary discharge to a general debility of the system, and particularly a local debility of the vesica urinaria. Accordingly I persevered in my stimulating plan, with some change of medicine, accompanied with such as might have some local operation upon the urinary organs. His urine began now to discover a clouded appearance, with a white purulent like sediment, and also his excremental discharge became

more deficient and scanty, accompanied with an uneasy tenesmus.

“ On the 14th I was called to see him, after spending a night of excruciating torment. Upon examining his urine, I was struck with astonishment and confusion when I discovered that his fæces had been actually discharged through the urethra with his urine, which gave a very offensive smell. He was fully sensible of this circumstance himself, as he had discharged frequently the contents of his rectum through the urethra the preceding night and that morning, with exquisite pain. I endeavoured to describe the nature of his present complaint in as intelligible a manner as possible; advising him of its danger, at the same time requesting the opinion and advice of another physician. After some expostulation and remonstrance he agreed to a consultation being held. I recommended Dr. Annan, who was a former pupil of yours, to his attention; he acceded, and next morning was appointed for our meeting. Accordingly, on the ensuing morning Dr. Annan and myself attended. We expressed our mutual astonishment, and readily agreed to the novelty and danger of the affection. I was unable to find a case precisely similar in the books of medicine or surgery; but possessing a limited collection of books, I supposed that possibly Dr. Annan might discover a case of a similar nature. He candidly confessed he never heard nor read of a case exactly similar, unaccompanied with any external fistulous or sinuous ulcer: we as readily agreed the sinus or ulcer must exist near the neck of the bladder,* perhaps about the prostate gland, forming a communication between the rectum and bladder. We were sensible of the importance and difficulty of the case, and equally impressed with the improbability of a radical cure. We discovered to him the dangerous and singular nature of his disease, with as much candour, and as little alarm to his feelings as possible. We advised a strict attention to the use of light and laxative aliment, as well as a use of the mildest laxatives, to keep up a regular and uniform discharge from the bowels. He is still walking about, having occasional attacks of severe pain, from the unnatural course of his fæces. These are mostly accompanied with pus, and sometimes with blood.

“ Was I to hazard an opinion respecting the cause of this

* I afterwards found this opinion incorrect, and that it must be seated much higher up.

disease, I would suppose, that being subject to the hemorrhoids for a number of years, these were frequently aggravated by hard labour, and a criminal neglect of the complaint; that by their long continuance, they had formed an outlet, which became, in some degree, necessary to the healthy exercise of the bodily functions; that the venous vessels had lost their tone, and by an improper, or too precipitate a check to the discharge, the vessels became surcharged, an engorgement took place, and a consequent inflammation and stricture, which terminated in suppuration and ulcer. This will, perhaps, account for the long continuance of occasional pains which preceded the ulcerous rupture, and the diversity of condition in his alvine discharges.

"He is impatient as to his situation, yet apparently willing to sustain hopes of recovery. Owing to my juvenility of years, as well as professional experience, he is desirous of having the opinion of more experienced characters. I am happy in complying with his request, as I shall be a participator in the satisfactory result. As his situation is peculiarly strange to me, and dangerous, as well as his mind extremely uneasy, I hope you will gratify the sufferer and myself with transmitting, with your own opinion, that of some experienced and celebrated surgeon, as Dr. Physick; advising of the nature of the disease, the most suitable and efficacious means of removal, and the probable issue of the case.

"I am, Sir, &c.

"S. AGNEW."

I received, in due time, the following polite answer from Dr. Rush, accompanied with the opinion and advice of Dr. Physick, which I shall insert first.

"*Philadelphia, April 21, 1783.*

"DEAR SIR,

"Dessault, in his surgical works, describes several cases under the title of "Schirrous affections, with contractions of the intestinum rectum," to which I think Dr. Agnew's case bears a strong resemblance. He says the disease occurs most frequently in women. I have, however, met with it in one male patient, and have heard of it in two others. In women, an opening is sometimes forced by ulceration into the vagina, through which the *fæces* are discharged, of which I have myself seen an instance. Des-

sault says this disease is often confounded with hemorrhoids. The only remedy is to pass tents or bougies through the anus long enough to reach beyond the strictured part of the rectum. They should be of small size at first, but their size may be gradually increased until they are one inch in diameter. Their use must be persevered in for a considerable time. In Dr. Agnew's case, if any hemorrhoidal tumours* exist which can be extirpated by ligature, they should first be removed; afterwards, I think the bougies would be very useful, not only by dilating the contraction, which probably does exist in the rectum, but also by keeping open the sphincter ani, so that the fæces may pass freely from the gut. It is probable that the opening into the bladder would gradually contract, and eventually altogether close, if the fæces were not forced through it. And this can only be prevented by removing all obstructions to their free and easy passage through the rectum and anus.

"Yours, &c.

"P. S. PHYSICK.

"Dr. RUSH."

"*Philadelphia, April 22d, 1803.*

"DEAR SIR,

"Immediately upon the receipt of your letter I sent it to Dr. Physick: you have his answer to it enclosed, *in which* I fully concur.

"In addition to the cases referred to by Dr. Physick similar to that of your patient, you will find two others in the first volume of Mr. Dobson's edition of the Medical Commentaries. The father of Dr. Monro, the present Professor of Anatomy in Edinburgh, died of the same disease. The ulcer in his case was of a cancerous nature.

"Mild and healing injections into your patient's rectum, may be used, perhaps with advantage. His diet should be of the most lenient kind, consisting of such substances as afford the least stimulus, and the smallest possible quantity of fæces. Sugar or saccharine matters, in all their forms, appear best calculated for that purpose: they afford the most mild nourishment, and in the smallest compass. It will be satisfactory to me to hear of the issue of our prescriptions, &c.

"BENJAMIN RUSH."

* There were none.

You may readily conceive that I posted with speed to communicate the result of my correspondence to my afflicted patient. He was pleased to find that I had not neglected his situation; and after explaining the composition and mode of applying the bougies, he agreed to the trial. I had five or six of different sizes, from that of a goose quill to one inch in diameter. I gave him instructions for introducing the smallest, and how to keep it securely fixed; informing him, at the same time, that it would be necessary to extract it when he had a disposition to evacuate his intestines.

I was sorry to find that the application did not offer a prospect of much advantage. He stated to me, upon my next visit, that he was unable to retain the bougie any considerable time without a great deal of pain. I urged him to a farther trial. He submitted for some time longer without experiencing any advantage, and then laid them entirely aside.

He continued declining in health, with a more frequent discharge of his fæces through his urethra, with purulent and bloody matter. His abdomen became exceedingly swelled with the distention of the bladder, which was now almost entirely choaked. An inflammation succeeded, with fever and thirst; a hot dry skin; singultus; occasional derangement of intellect, which terminated in a total delirium a short time before his death, and closed the painful catastrophe by a gangrene of the intestines, bladder, and perhaps the contents of the abdomen generally, on the 22d of May.

As this communication has been necessarily protracted to a considerable length, I shall only make a few observations on the treatment of this disease by bougies. I would agree with the ingenious Dr. Physick, that they *appear* to afford the most probable means of security; but I am induced to believe, from their trial in the present case, they cannot be depended on as a radical remedy. The intestine, from a long state of inflammation, and having no doubt a considerable surface of a vitiated and irritable ulcer, is not well able to contain this extraneous substance a sufficient time to effect any valuable purpose. If tents or bougies are to be considered the only probable means of cure, would not the introduction of a piece of intestine, of a moderate size, secured at the upper end, and injected with some liquid, so as to distend the structure, answer a good purpose? Or might not a flexible *hollow tube* be made use of to answer the double purpose of an artificial rectum, and the removal of the

stricture in the natural one? I think either of these methods preferable to the hard inelastic bougie. In the first instance the extraneous intestine being anointed with some emollient oil, or perhaps some healing substance, will make its surface more congenial to the irritable rectum, and being of a yielding nature, will produce little uneasiness from the peristaltic contractile motion of the rectum, or the different positions and motions of the body. But if a flexible hollow tube could be constructed so as to admit the discharge of the *fæces* without its extraction, it would afford a much better opportunity to the ulcer to heal, and prevent the discharge through the bladder, which I conceive will inevitably take place in a certain degree when the bougie is extracted for the purpose of an evacuation. But perhaps it should be considered a nugatory attempt to effectuate any permanent relief after the unnatural course of the *fæces* has taken place through the bladder;* because, should an unexpected healing of the ulcer take place, yet I must suppose that a considerable quantity of feculent matter must remain in the bladder, which, if it did not produce immediate inflammation from obstruction, would afford a prolific source for the formation of nuclei, and that disease which is too generally fatal, consequent to their existence. It should then be, I conceive, the great object of medical gentlemen to detect this fatal disease in its forming state, and then they may have it in their power, not only to add to the lustre and utility of medical science, but erect another monument to the relief of suffering humanity. I do not design that my observations should intimidate any fortunate and enterprising genius from arresting this formidable disease in its last stage, by the discovery of some appropriate application, and thereby gain another trophy to the healing art, and obtain a name among the illustrious favourites of the day.

* This opinion would appear to be confirmed by the information of Dr. Rush, who says, in a letter to me subsequent to the death of my patient, "that he never knew an instance of recovery."

On the Use of the ACETATE of LEAD in EPILEPSY: Communicated by Dr. AGNEW, of Gettysburgh, Adams' County, (Pennsylvania), to Dr. MILLER.

WE can only expect the science of medicine to become a rational and useful system by the united exertions of professional characters of merit. The relation of a successful mode of treatment in a disease which is too often the disgrace of our profession, ought to infuse a spirit of inquiry and observation among the gentlemen of the faculty: and each succeeding case of victory should be announced to the public, as well on account of doing justice to the author of the improvement, as rendering a service to the community. Your useful Repository is established for this purpose; and I take the liberty of transmitting you an account of the successful application of the *acetate of lead* in a case of *epilepsy*.

I was called upon in the latter end of November, 1803, by the father of a young lad aged about seven years, for whom he wished some medicine and my advice. The history of his case was nearly as follows: The boy had complained of head-ach for some time; appeared rather more dull than usual; was two or three nights before this application attacked, shortly after going to bed, with convulsions, great rigidity of the muscles, extended arms, clinched fists, eyes open and wild, foaming at the mouth, and complete insensibility. He was soon discovered by the family, who were alarmed by some noise they heard in the bed, which happened to be in the sitting apartment. He was immediately lifted, and his hands opened, which appeared to relieve him, and he soon recovered, but without any recollection of what had passed, and complained of being sore and tired. The family were considerably alarmed, not knowing the cause; but supposing it to be worms, gave him some tansy tea, and other bitters. Either the next night, or succeeding, I do not recollect at present, he was attacked in the same way as above, shortly after lying down. The paroxysm was of somewhat longer duration. The next day his father applied to me. I intimated to him my apprehensions of its being of an unpleasant nature, and advised him to use some precaution to prevent its return. He wished something simple at present, supposing probably it might not return. I directed him to be bled,

gave him a cathartic of jalap and calomel, advised him to be restrained from the use of animal food, to attend to keeping his bowels open, to be particularly cautious in exciting any sudden passion, to indulge him as much as possible in his wishes, and not to suffer him to expose himself to severe exercise, especially such as required stooping. I heard no more of him till February 9th, 1804, when his father called, and informed me he had been free of any attacks since he applied before, until two nights previous to the present date, when he had a fit similar to the former ones. I directed him to be bled again, and gave him another cathartic, requesting him to call shortly for some pills which I would prepare, and expected they would relieve him. I recollected that Dr. Rush had cured a boy in the Pennsylvania hospital during the winter of 1800-1, by the use of sacch. saturn. I therefore determined to give it a trial in the present case, knowing that there was a great uncertainty in the use of the customary articles. On the 11th the boy's father called; I gave him sixteen pills, composed each of a grain of sacch. saturn. and three grains of chalybs ppt. together with as many of the common aloetic pill; directing him to use two of each in the evening, and two of the saturnine pills in the morning, and return when these were finished. I united the chalybs with the acetate of lead, because I supposed that if any of their virtues depended on their tonic powers, the latter would have a good effect in conjunction with the former. On the 17th he returned, informed me the boy had no more convulsions since, and appeared to be mending. I gave him sixty more of the saturnine pills, and some of the aloetic, directing their use as formerly. I also desired him to return again if the boy appeared to be benefited by their use. He called on the 2d of March. The boy has had no appearance of disease since. I gave forty more of the saturnine pills, with some of the aloetic. I increased the quantity of the acetate of lead to two grains in each pill. On the 11th the father called again, and informed me his son had been perfectly well since: his appetite had become good, and he was increasing in flesh: entirely free of head-ach, and perfectly cheerful. He wished to know if it would be proper to use any more medicine. I replied, as he had evidently derived benefit from the use of his medicine, I would recommend the use of it a while longer, in order that every opportunity might be given to its having

a full effect, and making such an impression on his system as to completely defend it from future attacks. He took forty pills more, and gave them according to directions.

This boy has remained free from any appearance of this distressing complaint now for nearly two years; and although he was attacked with the prevailing intermittent last autumn, which would necessarily debilitate the powers of his system, and produce a predisposition to irregular action, he nevertheless remained exempt from any symptoms of his former complaint.

From the above history and cure, we learn that we are in possession of a remedy which relieves human nature from one of its most distressing evils. Is there not a great vibratility of the nervous system in this convulsive form of disease? and does the sacch. saturn. act as a tonic and bracer in restoring vigour and tension to the muscular and nervous systems? If so, might it not be used with advantage in many other diseases, as hysteria, chorea, &c.?

Are there any instances where it has afforded relief to those above the years of puberty? I am informed by Dr. Rush that he has failed in the use of it after this age. Is this the effect of association? or of the convulsive action in the adult being too vigorous to be overcome by the same force which conquers it in the young?

Let us rejoice that we can vanquish so formidable a foe in his non-age; and let us not neglect so important a period to contribute to the distresses of an individual, and the interests of society. In hopes that ere long the healing art will possess an antidote to the malignity of his force in mature age, I am, &c.

TOPOGRAPHY of WAYNESBOROUGH (Georgia), and its Vicinity, with the State of the THERMOMETER and WEATHER for Part of the Year 1802. To which is added, some Account of the DISEASES which prevailed, and a few Observations on YELLOW FEVER, and the principal Remedies of FEVER: Communicated by Dr. JOSHUA E. WHITE, of Savannah, (Georgia).

[Read before the Georgia Medical Society, October 6, 1804.]

THE fact has been long acknowledged, that diseases are influenced in a greater or less degree by peculiarities of soil and climate, and by various local circumstances which are met with in the face of a country. It is no less

true that they are influenced by states of the weather. Hence, it is evident, how much is to be learned in ascertaining a correct knowledge of endemical diseases by topographical information, and with how much certainty we may predict the diseases most likely to prevail, by previously noting the various changes in the weather. That these will not always enable us to judge infallibly I do not deny, but the general truth of the position I presume will be admitted. The object of the following sheets is, in part, to establish the power of topographical circumstances, and to elucidate the connection between *states* of the weather and subsequent diseases. The object is a laudable one, but I have too little of self-confidence to believe that it is more than very partially attained. I trust, however, there may be found here some useful facts, and it is these which give intrinsic value to medical histories. The observations were made in a sickly season, and at such short intervals only as could be snatched from the labours of a country-practice; and under the arrangement then adopted, they are now ushered into public notice. The *want of leisure* is a powerful check upon the operations of the mind, and this plea being urged upon good grounds, will, I hope, be admitted in palliation of trifling errors in the method; and, on the contrary, candour will give me credit for only so much as may be new or useful. For more I ask not.

Waynesborough is situated in Burke county, one hundred miles in a western direction from Savannah, and fifteen south west from Savannah river. It contains about twenty-five dwelling-houses of wood, besides work-shops, cotton-gin-houses, &c. Most of these are built on a rising ground, gradually formed by an ascent on two sides of the village. Briar creek, distant between three and four miles, is the only water-course of any considerable size near it. An inconsiderable stream runs in part through the town, but in dry summers it furnishes no water. Another takes its course south-west, and south-east from the town, within less than a mile. They are bordered more or less by low ground. At the upper end of the town is a pond, containing about two acres, and on the south-south-west and west, there are three smaller ones. Except in very dry seasons they are always filled with water. The soil is sandy, except in and near the ponds, where it is stiff clay. Three quarters of a mile south from the town, and less than a mile in direction south-east by south, there are two mill-ponds. Most of the intervening space is

in woods. The first was made for ginning cotton, but has been useless for several years, and the water is now suffered to run off in its usual channels, exposing a surface of about one and a half acres, covered with dead trees, bark, &c. and a few inches of water. The other has been made five or six years; at present it supplies a grist-mill with water, is filled with dead trees (most of them standing) and other vegetable matter.

A description of the neighbourhood will, in a great measure, suffice for the whole county. There are few hills of any considerable magnitude; the soil is generally sandy on the surface, but in some instances clay forms the upper stratum. Iron ore is to be met with in various places, and the large body of shells, noticed in *Medical Repository*, vol. vi. p. 329, runs nearly through the centre of the county. There are a great number of natural ponds of various sizes, from a few hundred yards in circumference, to one or two miles. These are generally bordered with woods, and at some seasons afford good pasturage for cattle. In proportion to the quantity of rain which falls, they are more or less filled with water. Several small creeks intersect the neighbourhood in various directions, and though many of them furnish water enough for grinding wheat and corn in wet seasons, they are often dry. Well water is used in preference to spring, which is sometimes impregnated with iron, and frequently with calcareous matter. No lime-stone is any where to be met with, nor has there been any discovery of lead, copper, or other metals except iron.

The weather in January, February, and March was warm for the season. In the first of those months, the mercury* did not fall below 35° , and this only once. On the 28th it was at 76° . During this month we had rain on ten days. The general range of the thermometer in February was similar to that in January; the weather being uniformly warm for the season. The mean temperature of the weather for March was $61^{\circ} \frac{2}{18}$. The mercury fell to 32° on the 8th, and on the 19th it rose to 82° .

As conveying a more accurate idea of the weather, I will transcribe from my meteorological book the state of the thermometer, and appearances noted at the time for the months of April, May, June, July, August, and part of September.

* In Fahrenheit's thermometer, placed in an open apartment on the north-east side of the house, eight feet from the ground.

Having no barometer or hygrometer, it was not in my power to note the weight of the atmosphere, or its degree of moisture and dryness.

Result for April.

Mean temperature for the month,	73° $\frac{1}{10}$
Hottest day 4th,	92
Coolest day 24th,	53

Of 50 observations on the weather, there were 26 clear, 13 cloudy, and 11 rainy.

Result for May.

Mean temperature for the month,	75° $\frac{7}{10}$
Hottest day 6th,	90
Coolest day 19th,	56

Of 53 observations on the weather, there were 30 clear, 17 cloudy, and 6 rainy.

Result for June.

Mean temperature for the month,	80° $\frac{3}{10}$
Hottest day 23d,	92
Coolest day 1st,	65

Of 52 observations on the weather, there were 27 clear, 15 cloudy, and 10 rainy.

Result for July.

Mean temperature for the month,	81°
Hottest day 22d,	92
Coolest day 12th,	70

Of 65 observations on the weather, there were 19 clear, 29 cloudy, and 17 rainy.

Result for August.

Mean temperature for the month,	80° $\frac{9}{10}$
Hottest day 27th,	92
Coolest day 12th,	80

Of 54 observations on the weather, there were 19 clear, 23 cloudy, and 12 rainy.

During the first six days of September, the highest rise of the mercury was ninety-two degrees, and the lowest descent was seventy-three degrees.

It will be observed, that in July and August there is noted a great proportion of rainy days, and that the first days of September were hot and dry. The quantity of rain which fell during the former period was immense. It did much damage to mill-dams, bridges, &c. Creeks and rivers over-

whelmed their natural limits, and every place which would admit of it, was filled with water. Peaches rotted in immense quantities on the trees, and the crops suffered much injury. The water in the wells in many places rose over the top. The well in my yard is thirty-four feet deep; the water rose within two feet of the surface of the ground, and was unfit for use. Its taste was like that of rain water, nor did it become at all fit for culinary purposes until it was several times emptied.

Such a quantity of moisture, aided by subsequent heat and dryness (for it rained but twice in the last twelve days of August and first ten of September), with the other causes to be enumerated presently, it may be readily supposed would produce a sickly state of the atmosphere.* This, indeed, became too evident. The usual endemic of the season made its appearance in June. Cases were more numerous in July and August, but it did not exhibit such marks of violence in either of these months as in September. Those who had before escaped were, with very few exceptions, now attacked, and many suffered a relapse two or three times. It was difficult to renovate the constitution, to restore the healthy action of the system, while the person remained within the scene of action for the febrile poison, and the slightest exciting causes were sufficient to kindle it afresh.

Not differing very essentially from our common endemics, except in violence, it will be unnecessary to enter into a minute description of all the symptoms. Those common to fever seldom vary much, unless in degree, and they are to be seen in Mosely, Jackson, Lind, Rush, and various other respectable authors well known to practitioners.

The fever most generally put on a remittent form, and when it was intermittent, the intervals were so short as to render the treatment almost as difficult. It often changed its type, and became remittent. It seldom indeed preserved the intermittent form long, but the paroxysms became gradually longer, (sometimes by anticipating the usual period of return) and the intermissions shorter. Symptoms of malignancy were manifested in various instances, not only by the violence of local pain, but by the discharges from the stomach and bowels. They were often dark coloured, frequently black, and highly fœtid. Several cases occurred of

* See Ramsay's Sketch of South-Carolina, page 20.

fatal termination in three, four, and five days, and the body after death was covered with livid spots.*

I was attacked on the 6th of September with the usual symptoms. The fever was moderate for a few days. The nausea, which had been troublesome from the commencement, now increased to frequent vomiting. I took three grains of tartarized antimony, with two ounces of Glauber's salts, (sulphate of soda) in divided doses, and at short intervals. This excited profuse evacuations upwards and downwards, and they were so black and fœtid as to alarm the bystanders, who reported I had the yellow fever. A repetition of laxatives, small doses of the carbonate of pot-ash, and the occasional use of cold water, prevented a return of violent exacerbations, and soon restored health.

The force of febrile action was sometimes manifested by anomalous symptoms. In a negro boy, between nine and ten years of age, there was such a torpor in the stomach and bowels, *without pain*, that it was with extreme difficulty I could excite either into action. Whether this want of sensibility arose from a morbid state of the brain, I will not pretend to say.† Calomel and jalap, castor oil, sulphate of soda, in large and repeated doses, were successively given, and though aided by frequent stimulating injections, of va-

* These were such where no medical assistance was had, or where the depleting system was not pursued. The putrefactive appearances, as noted after death, are to be considered as the mere consequence of previous inflammatory action; and the more violent this is, the more speedily will the putrid symptoms follow. I am inclined to doubt the idiopathy of typhus gravior. The symptoms of *putrid fever*, as described by Dr. Huxham, agree with those of the *Febbris Flava* of later writers. Are not heats sharp and permanent, pulse *tense* and *hard*, or sometimes quick, small, *fluttering* and *unequal*; head-ach and vomiting very considerable; *pains in the temples*, over the eyes, or in the bottom of the orbits; the eyes *full, heavy, yellowish*, and often *inflamed*; bloated and *dark coloured countenance*; pains in the loins and limbs, pain and heat in the stomach, with a *throbbing* of the temporal arteries, proofs of great arterial action? Would it not be singular, that such symptoms, if not timely checked, should not speedily destroy the healthy arrangement of the fluids? It is the natural consequence of "great muscular exertion," or violent arterial force, else why does it happen that persons who are freely bled, and otherwise evacuated, discover no putrefaction after death? This is the consequence of indirect debility. Why do animals that are killed after a long chase, or without loss of blood, soonest putrefy? The above reasoning will suffice for an answer, and it is unnecessary to multiply proofs, that putrefaction never primarily takes place in the living human body, but is *invariably* the effect of inordinate force in the arterial system.

† The same thing was observed by Dr. Rush in the Yellow Fever of 1793.

rious compositions, they failed to produce more than the slightest evacuations. Clysters of tobacco smoke had no effect. He took, in a very few hours, twelve grains of tartarized antimony, and, on the same day, four ounces of ol. ricini, without producing any evacuations.* This boy complained much of his head. He was copiously bled twice, and a large epispastic was applied to the abdomen. He speedily recovered.

J— W—, a delicate female, aged twenty years, was attacked on the 1st of September. She complained of extreme languor and lassitude, heat, and violent pain in the head and back; pulse frequent and tense. She was immediately bled, and the bowels opened. A temporary relief was afforded. The appearance of the blood, and the return of pain on the next day justified a second bleeding, which was repeated on five successive days. On the seventh day she was bled twice. It was always done in the exacerbation, and it never failed to remove the pain in the head and back,† but it soon returned, nor was it finally overcome until the general febrile action was conquered.‡

The whole quantity of blood taken amounted to more than one hundred ounces. The cure was aided by the frequent exhibition of cathartics and enemas, the local application of cold water to the head, face, back, arms and legs, and by repeated small doses of the carbonate of pot-ash. Notwithstanding the copious discharge of blood, the convalescence was speedy.

F— W—, a middle aged man, of a healthy constitution, complained of the usual symptoms of fever, but with more than a common affection of the head. Upon being called to see him, I found his pulse full, strong, and tense; tongue full and dry, and his skin hot. I immediately took from his arm sixteen ounces of blood; upon cooling, the crassamentum put on the cup-like form noticed by Dr. Rush, in his "Defence of Blood-letting," and fiery particles were deposited at the bottom of the serous part. Both these ap-

* See Dr. Rush's Works, vol. iv. page 33.

† See Dr. Rush's Works, vol. iii. page 264—269.

‡ It is worthy of remark, that she was twice before threatened with an attack of fever, and was each time relieved by a bleeding. She complained much of a fulness in the vessels, and she had been but a few months from Maryland. It ought also to be observed, that after the fourth and fifth bleedings, the slightest motion of the body produced fainting. This was not the case after the subsequent bleedings.

pearances manifest a high degree of inflammatory action. On the same day he took ℞i. of pulv. merc. cath. composed of equal parts of calomel and jalap. The most mild spare diet was ordered. From this time I did not see him for three days. Symptoms were now more violent; pulse full and strong; and he complained much of his head. I again bled him, prescribed another mercurial cathartic, applied a blister to the back of the neck, and directed cold water to be constantly applied to his head. On the succeeding day he was comatose. He was bled a third time, the intestinal discharges continued, and blisters applied to the temples. The coma did not yield until he was bled five times, and more copious evacuations kept up by the bowels, by the repeated use of cathartics and injections. After the fifth bleeding, a sizzly coat was discovered, manifesting a less violent action in the arterial system; and the coma subsiding, rendered the further use of the lancet unnecessary. In this case it will be but justice to observe, that the cathartics, blisters, &c. were auxiliaries in the cure; but I am confident these remedies would have failed without the repeated bleeding. He lost eighty ounces. Aided by small doses of bark and elixir of vitriol he soon recovered his strength.

In the months of October, November, and December, malignant appearances occurred less frequently. I met with only one in the last month which deserves to be noted. The patient was of a very robust habit, middle aged, highly florid complexion, a native of Virginia, and had been but a short time in the State. He was attacked early in the morning after a night's debauch,* with extreme nausea, and an inability to retain any thing on the stomach; dull heavy pain in the head, pain in the back, thirst, and extreme restlessness. He complained much of internal heat and oppression at the præcordia. His pulse was weak, slow, and intermitting. I would call it a *labouring* pulse, for the arteries appeared to expand with much difficulty.† It will suffice to say, that at four bleedings he lost sixty-four ounces of blood; that the most active cathartics were repeatedly given, and though

* Intemperance and watching were no doubt the exciting causes of the fever.

† This kind of pulse is often met with in pestilential diseases, and arises from the excess of stimulus acting upon the arteries. A weak depressed pulse is usual in pleurisies, peripneumony, and other internal inflammations. It rises after bleeding. See Rush's Works, vol. iii. page 40, et seq. and vol. iv. page 28.

aided by stimulating injections, his bowels were with the utmost difficulty moved, and the slightest evacuations only procured. At different times six blisters were applied to his head, breast, between the shoulders, and to his arms. The irritability of the stomach continued with little abatement, although he took frequently small doses of the carbonate of pot-ash in a state of effervescence, and other antiemetics.* In fine, nothing appeared to relieve him. The restlessness continuing, gradually changed into a wild delirium, and this into a raging one. His eyes had now a furious and uncommonly wild appearance; a look from them excited painful, or rather uneasy sensations. I shall never forget the expression of a gentleman of the faculty who was called in consultation. In one of the frantic paroxysms of the patient, he said something appeared to dart from his eyes, and to shoot through his whole frame like an electric shock.† At this time he had frequent involuntary discharges of blood from the intestines. He died a few hours afterwards, on the tenth day of his disease. The corpse emitted a very offensive smell.

What will the *importers* of Yellow Fever say to this case? It is unnecessary for me to comment on it. I can aver it was not derived from any *foreign* source, but was of pure *domestic* origin. The cause of such violent disease existed in the surrounding atmosphere, lurked in the system of every one, and only waited for exciting causes to bring it into action. The fatal termination of it was evidently accompanied by a dissolved state of the blood, arising from excessive arterial force, and consequent disorganization of the vessels. More copious bleeding would probably have averted the danger. I shall, perhaps, be excused for not using the lancet more freely, when it is known that the practice was a novel one, and that I had very powerful prejudices to overcome.

The above cases will suffice to evince a state of the atmosphere unfriendly to the health of man. The inhabitants of Waynesborough were more peculiarly sufferers; for not a family, and scarce an individual of a family escaped. Why were they thus afflicted? The answer is obvious. The

* Excessive vomiting was a common symptom in the Yellow Fever of 1793 and 1794. (See Rush's Works, vol. iii. p. 51, and vol. iv. p. 31.) In the above case I am disposed to attribute it to an inflammation of the internal coat of the stomach.

† Rush on the Yellow Fever of 1793, p. 38.

causes existed with most force almost at their very doors. The sources of putrid exhalations were here more numerous than in the neighbourhood generally. In the topography of Waynesborough it will be recollected, that contiguous to town, I have mentioned several small ponds; these were filled with water during the continued and heavy rains of July and August, and became highly offensive within the town; and not more than one hundred and fifty yards apart were two large heaps of cotton seed; either would have been sufficient to fill several waggons. They were removed before the sickness became general, yet not before they were in a high state of putrefaction, and *then* it was only to a short distance; cotton seed being used to fertilize the land, it was spread over the fields adjoining the town, where it was less deleterious, *only* because it was more diffused. The stench emitted from those masses of putrefaction was intolerable, and could be smelt at the distance of several hundred yards. The two mill-ponds within less than a mile of the town, aided in contaminating the air, for they were in the worst state for emitting putrid effluvia. One of them, it has been remarked, had not water sufficient to cover the dead trees, limbs, and other vegetable matter which lay on the ground; and it is a well established fact, that marshes are less injurious when they are overflown, and that mill-ponds are only so from the dead vegetable matter with which they are generally filled.* While moderate rains are of service by dividing, diluting, and washing to the earth poisonous particles floating in the air; immoderate rains, on the contrary, prove detrimental to health if the water stagnates. This favours putrefaction if aided by heat.† The continued wet weather of July and August filled almost every place where water could remain; the ground became so soft, that, to use a common expression, "it was rotten, and dangerous to leave the beaten path on horseback." A fætid smell was observed by persons riding through or contiguous to woods.

Under the combined influence of such causes, is it in the least surprising, that a pestilential state of the atmosphere was produced, and that diseases in consequence should mani-

* Dr. Dazilles informs us, that the *rainy* season is the most healthy at Cayenne, because the neighbouring morasses are then *deeply* overflown.

† It is recorded that a whole ship's crew were affected with a pestilential fever during a calm for several weeks in a southern latitude. It is also said the water of the ocean round the vessel became turbid, and was filled with myriads of little insects.

fest much violence? * Facts are multiplied to prove the domestic origin of a highly bilious malignant fever in various parts of the United States. Physicians have differed *too much* respecting the *name*, and have attended too little to the *state* of the disease. It may be called a simple remittent, a bilious remittent, a malignant bilious, or a yellow fever. † They are only different grades of the same disease, arising from the difference of constitution, and from a diversity in the nature of the predisposing and exciting causes. ‡ Accidental or fortuitous causes produce new symptoms, but these do not change the *original* nature of the disease. I do not hesitate to declare I have seen, since my settlement here, many well marked cases of yellow fever (so called) though the yellowness of the skin was not always an attendant symptom. || At the distance of one hundred miles from the nearest sea-port, it is farcical to look for foreign sources of infection. The causes exist as well in the United States as in countries within the tropics. They are not confined to our commercial towns, but they are often met with in places most remote from them. The yellow fever is not peculiar to the East or West-Indies, nor is the plague to Syria, Egypt, Turkey, or Algiers. All warm climates (and of course hot seasons) are equally liable to malignant diseases, when their production is favoured by vegetable putrefaction and other concurrent causes. I would fain hope our large sea-ports would not so often have to deplore the dreadful ravages of the yellow fever, if the fallacious idea of its importation did not abstract attention from domestic origin. While tracing it from ship to ship, and looking for it in every vessel from

* We are informed by Dr. Clark, in his *Observations on the Diseases of long voyages to hot climates*, that a malignant fever from marsh miasmata was prevalent at Prince's island in 1771. Riverius describes a pestilential fever in France from the exhalation from putrid vegetables. (See his work, *De Febre Pestilenti*, vol. ii. p. 97.) Also Mosely on *Tropical Diseases*, p. 407. Note.

† Towne calls it *Febris Ardens Biliosa*, and Hillary, a putrid bilious fever.

‡ "All fevers, from the simple ephemeral fever to the plague, as the highest grade of fever, are only different species of one and the same genus; and if fever in general is to be justly defined, the things common to them all must be noticed in the definition, that is to say, the genuine character must be expressed."

Professor Reich's Aphorisms.

It is time to throw off the shackles of nosological distinctions.

|| Dr. Mosely says, the yellowness of the skin, like the black vomiting, is not an invariable symptom of this fever. He only uses the word yellow in compliance with custom.

the West-Indies during the warm season, we neglect the lurking causes among ourselves. We should believe the evidence of our senses; our eyes convince us of the fact, and our noses too often lead us to the place whence issues the noisome vapour. Let us then attend to facts, and no longer be led astray by specious reasoning. We have been too long lulled into a fatal security, by a simple credulity in the doctrine of importation. Are we, from the purity of our moral character, or any other circumstance, to be considered as the "*chosen people of God*," and to be exempt from physical evils? No: our morality is not so unspotted; and while we neglect the use of those means which science and daily observation point out as the most effectual; while, I say, we are inattentive to the admonitions of experience, *we deserve to be scourged with pestilence*. We ought to profit from the melancholy lessons we have had, or meet the consequences of unpardonable carelessness.

(To be continued.)

A DESCRIPTION of the HOT SPRINGS and VOLCANIC APPEARANCES in the Country adjoining the River Ouachitta, in Louisiana: Communicated in a Letter from JOSEPH MACRERY, M. D. of Natchez, to Dr. MILLER.

DURING the summer of 1804, several persons, residents of the Mississippi Territory, visited the hot springs, and traversed the country of the Ouachitta; some from motives of curiosity, others on account of their health: Among the latter was Major E. a gentleman of the first respectability in this territory. To him I am indebted for the greater part of the information contained in the following observations.

The Ouachitta is a river of Louisiana; it empties into the Red River, thirty miles from the junction of the Red River and the Mississippi, near the line of demarkation. The Ouachitta runs nearly a south-south-east course, and can be ascended in boats a distance of six hundred miles, to where it forks. The hot springs are one hundred miles below the forks, situated between the 34th and 35th degree of north latitude, on a creek that falls into the river, and are about ten miles distant from it.

The lands on the Ouachitta, especially in the neighbourhood of the hot springs, are high, poor, broken, and stony. This is the state of the Ouachitta lands generally, except near its mouth, where, for a short distance on each side, the lands are low, level, and fertile, but for the most part subject to be overflowed.

The timber on the high lands consists of pine, black-jack, and mountain-oak. Silix, or flint, with its various combinations, often in the form of granite, is the stone most commonly met with. Schistus, or slate, exists likewise in considerable quantities. Fine specimens of rock-crystal from that place have been presented to me: the form is of an hexahedral prism, terminated by pyramids of an equal number of sides.

I have received a number of specimens of the minerals of the country. They were supposed, from their yellow and white metallic appearance, to contain the precious metals. But after a careful analysis, I could not discover any portion of gold or silver. They were composed principally of the following ores: Antimony, mineralized by sulphur, of a bluish grey metallic appearance, with a radiated crystallization, composed of slender hexahedral prisms, zinc, mineralized by sulphur, forming the ore called blende; feldspar, of a white, inclining to a red colour, granulated texture, the surface covered with crystal, of a rectangular form, and very brilliant; black schorl, with pieces of quartz intermixed.

Volcanic productions are common. The face of the country bears strong marks of fire. A rapid decomposition of mineral bodies below the surface still appears to go on. Major E. during his stay last summer at the springs, witnessed a great explosion of one of the mountains in the vicinity, attended with the sensation of an earthquake. An immense column of flame and smoke was seen to ascend a great distance: one of his hunters was near the place at the time. He visited the mountain the day after the eruption, and observed lava still flowing in the fissure caused by the explosion.

The hot springs are considerable in point of number. They arise from the side of a hill, at the distance of a quarter of a mile from the creek. Major E. supposed the heat during the dry season to be at the boiling point. Meat was boiled in them in a shorter space of time than could be accomplished by a culinary fire; they were made use of to prepare both tea and coffee: The temperature of these

springs is influenced by the season. During the months of June and July, 1804, it was very dry, no rain fell during that time. The waters were diminished in quantity, and the degree of heat was so great; that persons could not expose themselves to the vapour, which is the usual mode adopted by those who visit them on account of their health.

These hot springs have been, for some time, much celebrated by people settled in their neighbourhood, on the Mississippi and its branches, for their efficacy in curing or relieving chronic pains, paralytic affections, and inability to motion generally. The Indians have, time immemorial, resorted to them on account of their medicinal virtues. The ground around them is called by the aborigines, *the land of peace*. Hostile tribes, while here, remain at harmony with each other.

Many of the white hunters, who are very liable to disease from exposure to the vicissitudes of climate and season, have been restored by the use of these springs, from a state of entire inability of motion, to complete health and activity.

The water of the hot springs is soft and limpid, without smell. The taste is agreeable. It is drunk after it becomes cool, and used for every other purpose in preference to the water of the cold springs in the vicinity.

I received a quantity of it bottled and sealed. After a careful analysis, by evaporation and precipitation, I found that it contained less mineral impregnation than water usually does. Litmus paper, lime water, the nitrate of silver, the oxalic acid, alcohol of galls, and the prussiate of lime, indicated the presence of a small portion of carbonic acid, some of the muriate of soda, a small quantity of calcareous matter, and a scarcely perceptible portion of iron. Muriate of barytes, spirits of ammoniac, caustic pot-ash, acetate of lead, nitrate of mercury, the sulphuric and muriatic acids, with many other re-agents commonly used to detect minerals, produced no effect.

As hot waters are usually impregnated with minerals, their heat has been accounted for by their coming in contact with pyritous substances. But the water of these springs, notwithstanding its great heat, would appear from this analysis, to be purer than spring water generally; we, therefore, cannot account for the heat, by contact with mineral bodies in a state of decomposition. These springs are similar in this respect to the water of the spring of Geyser, in Ice-

50 *Description of the Hot Springs, &c. in Louisiana.*

land, the temperature of which is 212 degrees, the boiling point; yet the celebrated Dr. Black, who analyzed the water, found it to be pure. From whence then does the heat of these springs arise, which, during a dry season are at the boiling point, and, next to those of Iceland, are the hottest known? It is probable that a rapid decomposition of mineral bodies exists below the strata over which the water of these springs flows. The volcanic appearance of the country strengthens the supposition. The caloric, evolved by the decomposing minerals, may permeate the subjacent strata, and be received by the water.

The great relief experienced by persons who have visited these springs, the healthfulness of the climate, and the security derived from the American government, will render them, in time, a valuable acquisition to our citizens on the Mississippi and its branches.



 REVIEW.

ART. 1. *A concise Extract from the Sea Journal of William Moulton; written on board the Onico, in a Voyage from the Port of New-London, in Connecticut, to Staten-Land, in the South Sea; together with Strictures and Remarks on various subject Matters which came within his Notice on the Coast of South-America, and at a variety of Islands in the South Sea and Pacific Ocean, in the Years 1799, 1800, 1801, 1802, 1803, and 1804.* 8vo. pp. 158. Utica, (New-York) 1804.

VOYAGES to the southern hemisphere have become frequent in latter years, for the purpose of procuring the skins and oils of marine animals. Of these we gave a brief sketch in our Hex. ii. vol. ii. p. 76. The writer of the work now before us, after having spent several years in destroying the seals which inhabit the coast and islands of Spanish America, and in making observations on the physical geography of the places which he visited, has laid before his fellow citizens, on his return, some of the more memorable occurrences during his tedious and hazardous voyage.

Mr. Moulton sailed in October, 1799, in the capacity of mate, on board the *Onico*, bound on a voyage for the killing of the seal or *phoca*, which is clothed with a coat of fur. In addition to his station in the vessel, he was master of a gang, or detachment of the crew, for the destructive business which they set out to execute. On the 17th of January, 1800, they struck soundings off the coast of Patagonia; on the 20th saw Terra del Fuego; and on the 28th discovered Staten-Land. At this latter place they began their operations of collecting the skins of fur-seals for the market of Canton, in China, to be there exchanged for such merchandize of that country as would be proper for the market at home. After a recital of various adventures and proceedings, and a description of the shores and harbours of the island, Mr. M. gives the following account of this inhospitable region (p. 24—28.)

“*Climate.*—This island is situated in a rigorous climate, enjoying but a scanty share of the genial influence of the sun. Its atmosphere is chilly and moist, and subject to frequent

and sudden changes. The mountains attract the clouds and fog, which render much of the upper extremities invisible a considerable part of the year. A south wind brings piercing cold, and the clouds emit moderate showers of snow at all seasons. In the winter months, (viz.) June, July, and August, it is not uncommon for snow to fall from one to two feet deep. At the full of the moon in July, it fell nearly three feet on a level, and was principally dissipated in two weeks after. Northerly winds will be accompanied with rain indifferently at all seasons. The sun breaks forth and diffuses its benign rays, for a short space, with a pleasant vivifying cheerfulness in winter, surpassing what I ever felt at that season in the American States. The rigours of winter are felt but for a few days in succession, and the parching heat of summer in northern climates here is never known. The situation of this island, in an extensive ocean, causes the mildness and temperature of its climate, which are never found in the same parallel of latitude inland.

“*Soil.*—This has been accumulating from decayed trees and vegetable substances time immemorial; there are also along the shore some thin strata of clay and gravelly soil, on the surface of the rock, which forms the island.

“*Mountains.*—These are about as numerous as the island can admit, and stupendously steep and lofty: they admit of but little plain level land. The head-lands project into the sea in all directions, and terminate in rocks of monstrous height, some entirely and others nearly perpendicular. These mountains extend back, and disjoint the most general ranges which are formed in chains across the island.

“*Insular Islets.*—The contours are numerous islets, bordering on the various parts of this island; the most of them are small, and almost an entire mass of craggy rock. There are several off the north-western side of the island, situated at from half a league to four leagues distance from its shore; these are of the most considerable magnitude, and on which we caught about seven hundred seal, at the close of the season.

“*Face of the Island.*—The valleys are contracted into narrow strips by the mountains. From these mountains issue numerous springs and streams which roll in majestic cataracts into the ponds at their feet, which are formed by the confluence of these springs and streams. The valleys, and part of the shores, are enriched by the soil that is washed down on them, and are covered with trees, shrubs, and moss:

the latter is two feet deep and upwards in some of the valleys; the former are seen vegetating on an uneven surface, amongst decaying trees torn up by the roots. These lie in every direction to the height of six or eight feet, and are covered with moss, so that it is dangerous to attempt travelling among them. The steep ascent of the mountains gives the thrifty standing trees the appearance of an inconsiderable growth of shrubs, and at no great distance. I was surprised to find among this crooked vegetation some excellent timber, upwards of eight feet in girth. One log of twenty-four feet long, squared twenty-two inches at the small end; but advancing up, it diminished in circumference and height for about two thirds of the ascent up the mountains, where it dwindles to shrubs scarcely covering one's shoes; and above which the rocks are bare. Ascending, they divide into innumerable peaks. From the mountains' tops a prospect of their variegated, huge, rude, and bare heaps, presents a picturesque view that impresses the mind with an idea, not of an immense city, but of a system, or a world in ruins, and affords no barren subject for contemplation.

"The day we arrived at this island, the atmosphere was thick; those who had never before seen it, could not at first believe it to be land. It really had, through the fog, more the appearance of a frightful thunder cloud arising in huge columns than that of land, for the cragged protuberances that lined the horizon presented themselves to view in every attitude imaginable, save that of being biggest at the top.

"We made this island in January, which is here the mid-summer month; there was snow in spots on the mountains, and has been ever since, though it is not perennial. The snow falls in small showers at all seasons of the year. The ravages made by the elements of wind and water in this island are truly astonishing. Either water-spouts or other tremendous torrents have torn monstrous deep and broad gullies in the mountains; beginning at the utmost heights, and carrying before them ponderous rocks of immense size to very considerable distances below.

"The streams meander in innumerable courses into the ponds and ocean. There are, from some cause, strips of one hundred yards broad and under, of vegetation and soil, swept from the rock on the mountains' sides, from the utmost height to which the soil extends, into the water. Tornadoses have swept all, even the most sturdy trees, before them wherever they have directed their course. I have seen on

this island black adust cinder, in sundry parts of it, and a variety of other evidences of its having undergone the ravages of subterraneous fire. It is reported to have been the seat of volcanos; but whether from any authorities more to be depended on than the effects to be seen, I know not. Along the shores, in sundry places, are extensive pieces of cleared land, on which are huge tufts or bogs, producing a large broad-bladed grass.

“*Productions.*—The trees, (save one species, the wood of which resembles white mulberry) and shrubs on this island are ever-green. Of the former there are three kinds, two only of which are good for fuel or timber. The one already described, and one other kind which, when green, is soft, and cuts and looks like soft maple, is ponderous and apt to sink even in sea-water; but when seasoned, is hard, firm, and close, and works like cherry-birch, which it then resembles; its bark will tan, and the profuse foliage it bears is of a deep hue, not very unlike the beach-plum, though of a smaller size and thicker texture. There are among the shrubs here, of which there are not more than half a dozen species, one kind, the leaves and bark of which have a likeness to the tree last described. This shrub blooms and bears at all seasons, (though the winter is injurious to it). They grow from the size of a low cranberry to that of an English cherry, and are a pleasant, sweet, spicy fruit. Another species of shrub was found, grown in some instances to the size of a man's ankle, which produces a blue berry at all seasons of the year; is similar in shape to the barberry, and resembles it in taste, though without so sharp an acid; it has an acrifolium, and prickly stock and limbs; the wood is very compact and heavy, and of a brighter and deeper yellow than fustic. Here is a red tart berry which vegetates on a small stock, the size of a wild cherry, and somewhat resembling it in taste. A strawberry is also found here, peculiar to this island or climate, and very pleasant to the taste; and a most delicious berry, which is white, tinged with red on one side, the size of juniper, to which it has a slight resemblance in flavour; it grows on a vine which makes an excellent tea. I have seen but one species of edible herb here, which is wild cresses. Here are rushes, and a few medicinal herbs, used as stimulants. The water here is excellent; it rises pure and crystalline on the mountains, but imbibes a deep yellow colour where it runs among the roots and soil. One stream, the outlet of a small pond

at the boat harbour, near Hetchel-point, is remarkable for its warm quality. The springs of water along the shore in sundry places are effected by the iron mines in which this island abounds. The salt of iron or copperas I have found here, and proved it to be good in setting a jet black on leather. I have never seen nor heard of a poisonous insect, animal or vegetable production on this island.

" The only quadrupeds found here are rats and otter.

" *Land Birds*.—Hawks, two species, pigeon hawk, and an edible one, which resembles a crow, with a bill like a parrot.

" *Species*.

" 1. Vulture or Buzzard, a few of which we killed, and the men ate.

" 1. Owl of a dark colour. Robin red breast.

" 1. Owl, the size of a dove, of most delectable plumage, changeable green, blue and yellow, long beak and claw; the former deep blue, the latter black; its notes low, soft, and melodious.

" 1. Sparrow, its notes numerous and melodious. Chipping birds. White pigeons.

" *Shore and Sea Fowl*.—Cormorants, Shags 2 species.

" 3. Penguins. The Jack-ass, the Juntoo, and the Macaroni. These are a very great natural curiosity of the amphibious kind; they come on land only to propagate their species, are clothed with a curious variegated thick coat of short feathers, and walk as erect as a man: They cannot fly, for they are provided with fins or paddles like a seal rather than wings. The Macaroni are the largest species, and weigh about forty pounds each when full grown.

" 2. Herons.

" 2. Geese. The most delicious kind feed on the upland, and resemble the pheasant in its plumage.

" 4. Ducks. The largest species, called logger-heads, have small wings, and cannot fly.

" 2. Red-bills.

" 2. Albatrosses; Sea-Hens, and various species of Gulls.

" *Amphibious*.—Hare-Seal, the male of which is the Sea Lion. Fur-Seal, by Captain Cook and others called the Sea Bear. Sea-Elephant, a monstrous great slow-motioned animal, all over of a dark grey colour, with light olive cast, a full eye, the size of the eye of an ox; they are shaped like a seal, but destitute of external ears; the nose projects considerably beyond the mouth; the fore feet, or more properly

fins, with long round nails, are remarkably small in proportion to the body; the hind feet or fins still less, short hair, and a loose wrinkled skin; its blubber is very thick and full of oil; some of them are said singly to produce eight barrels of oil.

“*Shell-Fish.*—Mussels of two kinds, the common blue muscles on the rocks above low water mark, and another kind larger than any oyster I ever saw, are taken in three feet water at the lowest ebb of the spring tides, and are an excellent fish.

“It is observable that the spring tides rise and fall here twelve or fourteen feet, and the ordinary tide ten feet: the flood tide sets to the westward.

“Whales and sundry kinds of small fish are found on this coast.

“I shall only add one remark made by Captain Cook on the animals that inhabit this island, because it contains a pretty lesson, worthy the imitation of rational beings, and is a striking admonition to men of inflammatory, rancorous spirits. “It is amazing to see, he observes, how different animals which inhabit this little spot are mutually reconciled. They seem to have entered into a league not to disturb each others tranquillity. The sea lions occupy most of the sea coast; the sea bears take up their abode in the island; the shags have post in the higher cliffs; the penguins fix their quarters where there is the most easy communication to and from the sea; and the other birds choose more retired situations. We have seen all these animals mix together like domestic cattle and poultry in a farm-yard, without one attempting to molest the other: nay, I have often observed the eagles and vultures sitting on the hills among the shags, without either the old or young of the latter being disturbed at their presence.”

On the 2d of October, 1800, they proceeded round Cape-Horn, to the westward and northward; on the 22d made Juan Fernandez; and on the 30th saw Massafuero. The former of these islands lies in lat. 33 deg. 45 min. S. and long. 79 deg. 40 min. W. the latter in 33 deg. 46 min. S. long. 81 deg. W. in a direction W. by S. $\frac{1}{4}$ S. from Juan Fernandez. Massafuero is resorted to by a great number of vessels, for the purpose of getting seal skins. We shall gratify our readers by extracting the description of this celebrated volcanic pile in the words of the author. (p. 100.)

“There are three islands off the coast of Chili, called

Juan Fernandez and Massa Fuero in Spanish, signifying, *more distant* in English: The last mentioned island is distinguished by its name, as lying farthest off in the Pacific Ocean, and is of an oval form, about nine or ten miles in its greatest extent, from east-south-east to west-north-west. This shapeless mass, rising six thousand six hundred feet out of the ocean, is cut into numerous deep gulches, making in, in every direction, running almost across the island, and abounds with masses of rocks between the gulches, rising in a steep ascent until they terminate in sharp ridges. The stone is light and porous; the veins that run through and variegate the face of the mountains all over the island, are black, deep and pale red, yellow, and all the shades that clay and earth are subject to by fire. There are also deep caverns on the sides of the mountains glazed and overhanging in lumps ready to drop in their liquid state; others are like icicles suspended, stiffened by the air, cooled, and remain a glassy cinder. I went in company with several persons with a light, into a cave that makes into the mountain on the north-west side of Pease's Gulch, so called; it descended moderately from the entrance twenty steps, and was level from thence in a strait direction into the mountain. The arch was of sufficient height to walk under without stooping until we got near the utmost extremity, where it measured thirteen rods from the entrance, and was glazed over with a brittle substance of a light amber, hanging like icicles. There are stones of all sizes cemented in a black mass equally hard, and tenaciously adhering together in all weathers, so that a man can very seldom stir one of them, be it ever so small, without breaking it. The people ascend the precipices where they find this substance in safety, if they can get hold of enough to hang on and raise themselves. That the island throughout has undergone the severest ravages by fire, is sufficiently evinced by its appearance. Here is plenty of wood, and numerous streams of good fresh water issue from the mountains, pouring down in many places in mighty cascades. One at the south-east plains, as many can testify, has worn an incredible niche in the rock down which it is precipitated three hundred feet; a considerable projection towards its base is cut nearly perpendicular, down to the common level or surface, similar in appearance to that which is occasioned by water's falling on a large body of ice. Thousands of wild goats have been killed on this island by sealers, and a great plenty now inhabit the mountains; there

are a variety of excellent fish also in the waters that wash its shores. There is anchorage around this island, but no harbour; the climate is healthy, and the seasons similar to those described in Chili; winds variable; its latitude is 33 deg. 46 min. south, longitude 81 deg. west.

"There are more than two hundred people on this island, (rising of one hundred and seventy of whom do not belong to any ship,) of all descriptions and characters of men. There are a few deserters from American and English ships, among whom are convicts from Botany-Bay. There are some who belonged to ships which were taken and condemned by the Spaniards; some after their voyages were obtained, were *honourably discharged* by their masters without taking a reward, others badly used who gave a part, but more who gave the whole of their voyages to get out of the clutches of their tyrants. The oppression of these tyrants was insufferable the moment their voyages were obtained, and the shares of their men more coveted than their services. American citizens and seamen are dispersed throughout this part of the globe."

On the 1st of December they proceeded for the island of *Santa Maria*. At this place they arrived on the 6th. Here is also a great resort of sealing vessels, and occasionally of whalers. The author describes this rendezvous of those amphibious creatures and their destroyers in the following terms. (p. 64.)

"*Santa Maria's* island, on the coast of Chili, lies in the very mouth of the Bay Lavapie; the south end within two leagues of the main, bringing the south-east head of the island to bear south-west by south. In four or five fathoms there is good and safe anchorage against all but south winds. A low sandy point projects a league into the bay, forming a shoal two miles from its terminating point, northward of this harbour. Ships run into an open bay in safety around this point, and make a safe harbour with a south-wind, in from six to ten fathoms, to the north-westward of the point. It is eleven leagues south-west from the port of Conception, and four west from Oroco, a small town at the bottom of Lavapie Bay. Its south harbour is in 37 deg. south latitude; a rocky shoal runs out to seaward from off the west side of the island to the distance nearly of half a league. This island is at present the property of Don Manuel Santo Maria, a Captain of dragoons in Chili, who inhabited it anterior to the late war; its soil is very fertile, and its climate tempe-

rate, and extends about three leagues along the coast. Here are plenty of seine-fish, fowl and wild hogs, of which we took fourteen, together with rising of nine hundred dozen gull's eggs. The pelican, and a species of the eagle, the largest fowl I have seen, inhabit here; but I shall omit a description of them. This is a fine place for wooding and watering. The mariners have destroyed many fruit trees here. Hump-back and right whale frequently come into this bay, and hare-seal resort here to propagate their species."

On the 13th of January, 1801, they sailed from Santa Maria to Valparaiso, on the coast of Chili. The atmosphere was remarkably clear, and Mr. M. had a prospect of the Andes stretching far inland towards the north. Their tops at that season, the midsummer of that region, were white with snow, and the remoteness of the mountains gave the shades of snow and bare ground a resemblance of white and black clouds blended with each other. At the distance from which he beheld them, their height appeared stupendous. The interpreters told them, as they entered the port, that the mountains were from sixty to seventy leagues distant. On the 8th of February they returned to Massafuero. On the 30th of September Mr. M. arrived at the port of Concepcion, in Chili, lat. 36 deg. 40 min. S. This place he thus describes. (p. 81.)

"The port and harbour of Concepcion is situated on the north side of a bay. The river Chili, which river is now called Coancaqua, and from which it is divided by an arm of land that extends into the sea west, and thence north-easterly until it terminates in Taleaguana-Point, forming a bay about three leagues deep, and about the same in breadth. It has a good road on the starboard side. Within its mouth is a great shoal, which is known by the breaking of the sea upon it. In going within, it is necessary to range close with the point, and so run between that and the shoal. The island of Quiriguina is in the middle of the entrance, and makes two channels; that on the east side is safe, and a league wide, and the other ought always to be avoided, as it is full of rocks and narrower. Within two musket shot from the north point of this island the water is not deeper than seven fathoms. All the bay has good anchorage; abreast of the town of Talcaguana, which is south at the bottom of the bay, is the only shelter from the north. Bring Fort St. Augustine at south, and Fort Galvez near the watering place

at north-west, in three to four and a half fathoms, is a good soft blue oozy bottom; all along the south-east part of the bay is an extensive shoal. They moor north and south. This port is in lat. 36 deg. 41 min. S. long. 72 deg. 34 min. W. fifty leagues south-west of St. Jago, the seat of government and capital of Chili, three leagues to the north-west of Concepcion, which is a large town on the north side of Chili river, and eleven leagues north-east of the island of Santa Maria.

“*The Town.*—Not more than one-eighth part of the inhabitants are Spaniards, unmingled with the blood of the aborigines. The town is not large, but on account of its commodious harbour and trade, is considerable; the country back of it is profusely fertile in every thing incidental to the climate. They furnish the southern ports in Chili with sundry articles of their produce, among them are wine, which is of an excellent quality, brandy, leather, &c. They also furnish the leeward ports of Peru, and as far as Acapulco, or Aquapulco, in New Spain, in lat. 17 deg. 10 min. N. with wheat, jerk-beef, (the meat stripped from the bone, and saved by drying almost without the use of salt) neat's tongues, tallow, butter, cheese, hog's lard, wine, fruits, &c. &c. I have seen strawberries here that measured between three and four inches in circumference; their melons are exquisitely fine. We daily see paroquets passing in flocks, like pigeons with us. Their forts, to use that term for want of some appropriate one, their works are so ill designed, that I doubt whether the one called St. Augustine, in front of the town, could bring more than two pieces of cannon to bear upon one ship in the harbour; they are both commanded by eminences in the rear, within musket shot, and the other on the west side of the bay is pretty well secured from shot from shipping, in consequence of its elevated situation. Were a single company of seventy men, however, to attack them in their rear, with muskets or handgrenades, they would dislodge them.”

In May, 1802, he returned to Massafuero again, and engaged in killing seals, and continued the employment until the end of the year. In January, 1803, he went again to Santa Maria, and continued the same business. Hence he sailed to the *Lobos Islands*. They made *Lobos de Mer* on the 29th of April, and *Lobos de Tierra* on the 6th of May. They are thus described. (p. 109.)

“*April 29.*—At 5 P. M. came to anchor in 20 fathoms

water, in a bay that makes in the N. W. part of the island. There is a sunken rock, nine or ten feet below the surface of the water, a little within the entrance, about midway between the shores; ships beat in the starboard side of it, where the shore is bold. Avoid the rock, and there is nothing to impede a ship from beating up.

"Lobos de Mer is composed of a cluster of broken rocks, separated by the water, and is about two leagues in circumference; it is destitute of fresh water, wood, and every kind of vegetable production, and is situated in lat. 6 deg. 54 min. S. and 8 or 10 leagues westward of the Peruvian shore.

"May 6.—The island of Lobos de Tierra. We then hauled on a wind to S. W. S. and ran with from a four to five knot breeze, until five o'clock, when we came to anchor in four fathoms, good anchorage and smooth bottom, on the east side of the island. The ship arrived and came to anchor on the opposite side the same evening, in a bay opposite to the high rock standing off from the shore, in six fathoms; good stiff blue mud, and clear smooth bottom. This island consists of a mass of rocks, destitute of fresh water, wood, and vegetable productions, and is about seven or eight miles in its greatest extent, from N. by W. to S. by E. and nearly half that distance broad in the widest place. It appears, like Lobos de Mer, to have been not many years since covered with fur and hare-seal, which have propagated immensely. The English, and other sealers have taken hundreds of thousands of them, which is sufficiently evident from the bones that are still to be seen; there are, however, comparatively but few remaining at either of these islands. The harbour in which the ship anchored in this place lies in lat. 6 deg. 26 min. S. The north end of the island is about five or six leagues from the main."

Proceeding thence round Point Auxo into Sethuray-Bay, they collected a supply of salt from a place on the shore where vast quantities were crystallized by spontaneous evaporation. Here he saw the sort of vessels or coasting crafts called *Cattamarans*, formed of a raft of very buoyant logs, which sail surprisingly, and ply remarkably to windward. (p. 111). At Coquimbo-Bay, in Chili, he mentions another kind of craft made of seal skins, cut out somewhat in the shape of a small canoe, rising and peaked at each end, firmly sewed together, and made impervious to water. When intended for use, they are inflated with air, blown in through a hole at one end, which is afterwards closed. (p. 113). At

Port Ferrol he saw another sort of craft, which they call *Balzas*, constructed curiously of three-square rushes. (p. 119).

"They have but one species of water craft in this place, which they call *Valza** or *Balza Chicito*; they are made of a kind of rushes that grow up three-square, eight or ten feet high, and measure an inch and an half across a square on each side next the root, and diminish upwards until the top terminates in a point. These are dried and laid even at the but-end, and lengthened by splicing to fourteen feet, more or less, and a small cord passed tight round a bundle of these about the size of a man's body, from the but-end forward, crooking it up as they pass the cord, (like a sleigh-runner) till they raise it two feet or more, at the upper end, which is slim; this makes half a *Valza* or *Balza*; then by passing a line around two of these firmly, from end to end, they make a *Valza* or *Balza*. On these they go a fishing with hooks and lines, or nets, and paddle with a broad piece of bamboo, which they hold by the middle, and paddle with each end a stroke of a side alternately, up and down the coast as far as their navigation extends. As soon as they land, the *Balza* is carried on the shore, and placed in a position for the water to drain out of it."

Coasting along the continent, and visiting the adjacent islands, our author mentions *Lady's-Bay*, *Torge-Head*, *Pisco*, lat. 13 deg. 25 min. S. *Chinca* 13 deg. 10 min. S. *Asia-Island*, *Callao*, *Marcasis' Islands*, *Santa-Bay*, and some other places visited by the *New-England* navigators and others who frequent those coasts for the purposes of whaling, sealing, and smuggling. From *Lobos de Tierra* he sailed for *New-York* in December, 1803, crossed the tropic of *Capricorn* on the Atlantic side on the 23d of March, and arrived at *Sandy-Hook* on the 19th of May, 1804.

We copy the succeeding paragraph on account of its peculiarly interesting nature from p. 129.

"Mr. Newton, supercargo of the English ship *Unicorn*, with a small gang, was at this island; it was curious to observe with what freedom the supercargo and others related the various outrages committed on the natives on the north-west coast by themselves and the other traders; they fired on and killed them in their canoes; if they were dilatory in bartering or cavilled at the prices the Captain set on his articles, it was cause sufficient for him to appeal to his cannon.

* They sound V as the English do B.

In consequence of the nation's committing hostilities upon some Russian hunters or traders who came into their territories in pursuit of fur, (the Indians did not go into Russia to annoy them), an English trading ship, by an agreement with an American ship, went in concert to war against the tribe. They killed from their ships many of the inhabitants, and annoyed as much as possible their villages and their craft lying within reach of their shot on the shore. To have inquired what induced the natives to the hostile act they charge them with, would have brought into view a possibility of their having previously received some treatment which they had a right to resent; nothing however could have been thought more ridiculous than such an inquiry. The Unicorn brought off from the northwest coast six seamen, who say that they were left on shore there by the Jenny, of Boston. Mr. Newton spoke highly in commendation of them, and of two others who sailed out from the same port, and whom she picked up there and at the Sandwich islands. It is exceedingly convenient for ships that they can ship American seamen in these islands and on the main for any voyage, and that they can find those that are ready to work a passage to any other part of the world. The master of the Jenny perhaps has not been so fortunate on this as a former voyage, when, according to a report of a long standing, he got a chief on board, whom he retained until he received a valuable ransom from his tribe; this ransom consisted of sea-otter skins, which he demanded as the condition of his freedom. A thorough investigation of this business, were there any to prosecute it, might be thought, however, extremely impolitic, as it might tend to relax some important spring in the machinery of commercial enterprise."

At Pisco he relates that there is a mountain of salt. A ship's crew ascended the slope a mile, and walked on the side of it several miles. They travelled on a bed of salt, (p. 116), which could be seen to the summit, covering the face of the earth like snow. It was very white and fine; it was at the same time heavy, but lightly covered with loose sand and dust, resembling earth loosely hove up by the frost. Under this the salt is clean and entire.

We have carefully avoided noticing any part of Mr. M.'s narrative which relates to the quarrels which broke out on board the Onico, between himself on the one side, and his Captain and the Chief Mate on the other, in which most of the crew afterwards became parties. These unhappy pro-

ceedings occupy much of the book, and the writer evidently intends them as an appeal to the public. Before that tribunal they will, in all probability, produce a beneficial effect. But as these altercations lie beyond our limits, we have judged it most proper to confine ourselves to such subjects of geography, commerce, and navigation as appertain to our plan. And we conclude with expressing our acknowledgments to Mr. M. for the good and seasonable information he has afforded to us on a part of American geography and business not so generally understood as it deserves to be. As he laboured under distressing embarrassments, we can scarcely conceive how he preserved so many observations and remarks, and, indeed, how he kept a journal at all.

ART. 2. *Essais sur l'Histoire naturelle des Quadrupedes de la Province du Paraguay. Par Don FELIX D'AZARA, Capitaine, &c. &c. écrites depuis 1783 jusqu'en 1796. Avec une Appendice, sur quelques Reptiles, et formant une suite nécessaire aux Oeuvres de BUFFON. Traduit sur le Manuscrit inedit de l'Auteur, par Mr. L. E. MOREAU-SAINT-MERY, Conseiller d'Etat, Resident de la Republic François, pres son altesse Royale l'Infant duc de Parme, &c. &c. i. e. Essays on the natural History of Quadrupeds of the Province of Paraguay. By Captain FELIX D'AZARA, written between the Years 1783 and 1796. With an Appendix, concerning certain Reptiles, and forming a necessary Supplement to the Works of the Count de BUFFON. Translated from the unpublished Spanish Manuscript of the Author, by M. MOREAU-SAINT-MERY, &c. &c. 8vo. Tom. i. pp. 336, Tom. ii. pp. 499. Paris. Pougens. 1801.*

PURSUANT to our design of incorporating into our work every thing appertaining to our province which the two Americas afford, we offer to the consideration of our readers D'Azara's History of the four-footed animals of Paraguay, an extensive colony of Spain, situated to the south and westward of the Portuguese possessions in Brazil. Of the publication of this work we gave our readers notice in our Hex. ii. vol. i. p. 290.

The history of the work before us is as follows:—Serious difficulties had arisen between the governments of Spain and

Portugal concerning the limits of their American dominions. And notwithstanding the solemn decision of Pope Alexander VI. in 1593, fixing the boundary by an imaginary celestial line, and in spite of several negotiations between the respective powers, the trouble and vexation still subsisted. Captain D'Azara was sent by the King of Spain to assist, on his part, in settling this disputed boundary. The Court of Portugal being tardy or unwilling to enter seriously upon the business, although they appointed Commissioners, never sent them forward according to stipulation. In the mean time D'Azara having employed himself in executing various other pieces of business in Paraguay, and having afterwards waited for the agents in Lisbon until his patience was exhausted, travelled to Rio Janeiro, in Brazil, by land, to meet them. After encountering almost every danger and hardship in his journey thither through the wilderness, his expectations were wholly disappointed, inasmuch as the Portuguese Commissioners never appeared to do any thing. It was supposed that they avoided all precise demarcation of limits, for fear of curtailing the contraband trade, which they, or the English in their name, had long carried on with the neighbouring districts and provinces claimed by Spain.

But although this part of the business altogether failed, Don F. Azara did not, on that account, return to Europe. He continued in America, and fixed his residence in the city of Assomption, the capital of Paraguay. Its situation is in 26 deg. 16 min. S. At this place he collected the materials of the present work. He has also written tracts, not yet published, on the geography and ornithology of Paraguay, travels into the interior parts of South-America, a description of the river La Plata, and some other compositions. Such are the fruits of Capt. D'Azara's industry during a continuance of twenty years in that country. Having been continued in the public service there by his government, he gratified his taste for natural history by availing himself of all opportunities.

The manuscript of the work now in our hands, was sent by the author, several years before its publication, to his brother, M. Le Bailli D'Azara, then Spanish Ambassador at Rome. It was some time after he ceased to act in the like high public capacity at Paris that he put the original, yet unpublished work, into the possession of M. Moreau-Saint-Mery, for the purpose of being turned into French, and of being first offered to the learned world in France. The

translator, having given to the Spanish original a Parisian dress, has added to his version, a preface, explanatory notes, some zoological synonymes, and a copious index. The author has reason to rejoice that his papers fell into the hands of a translator so capable of doing them justice. It is pleasing to behold a man of St. Mery's talents engaged in such a task.

Such was the origin of this zoological treatise, and such the train of circumstances which led to a publication of a French translation of it in Paris before the original Spanish was printed in Madrid.

Don F. D'Azara has given us the history of nearly four-score native land-animals of Paraguay and the adjacent provinces. To these he has added the histories of horses, asses, mules, and neat cattle, as they run wild and propagate their species in the vast forests and prairies of South-America. He has given to the greater part of the creatures he describes, the aboriginal names in the language of the Guaranis: for such is the name of the Indians which dwell on the banks of the rivers Araguay and Parana, and which the Jesuits have gathered into a great number of societies. A part of these societies are at this time dependent on the province of Paraguay; the other is attached to the government of Buenos-Ayres. The latter province was a district of Paraguay until 1620, when it was separated and erected into a distinct province. Buenos-Ayres, which formerly belonged to the Vice-Royalty of Peru, now is subordinate to that of Rio de la Plata. The Guaranis were the most considerable nation of natives at the time of the Spanish conquest. The survivors and their dependants have been most tenderly fostered by the Jesuits. These priests have established many *missions* among them. By a mission is meant a certain organized territory and society of christianized Indians. They amount to about thirty, and are chiefly composed of the Guaranis. It is in the Guaranis tongue that the author has given the names of the animals which he describes. To a number of these his translator has added the synonymes from Linnè, Buffon, and La Cèpede. The animals which he has particularly noted are, the *tapir*, two species of native *wild hogs*, four species of *cervus* or *deer*, two species of *myrmecophaga*, or *ant-eaters*, six species of the *felis* or *cat family*, three species of the *viverra* or *ferret genus*, two species of the *mustela* or *weasel*, six species of the *didelphis* or *opossum*, three species of *ursus* or *bear*, seven *cavies*, one *rabbit*, seven *rats*, one (*hysterix*) *hedge-hog* or *porcupine*, eight (*dysapus*) *ta-*

tous or armadillos, four (*simia*) monkeys and baboons, twelve (*vespertilio*) bats, and six (*lacerta*) alligators, lizards, and chameleons. Besides which he has a distinct memoir on the wild horses, asses, mules, and kine, which, descended from European stock, run now at large in the woods.

Of these animals, the author has described none that he has not either seen alive or soon after death. His descriptions of many of them are very detailed and circumstantial, as are the accounts he gives of their habits and way of life, and of the names given to each by the Spaniards and the Indians. All these particulars are frequently accompanied with sensible and critical remarks on the species as treated of by other naturalists, particularly by Buffon. In these strictures Don D'A. always shows that he is a good observer, and that he is scrupulously exact. There is, however, reason to believe, as he wrote his observations without the aid of many books, or of any museums, that he has made several mistakes as to the sameness and difference of the species which he notes. He seems indeed too vehement in his attacks upon other naturalists who have preceded him; and in the abundance of his zeal, has sometimes advanced opinions no better founded than those he rejects. He seems to have entertained a sort of infallibility of judgment with regard to himself, and a corresponding disregard for the opinions of all persons which differed from his own. It may be said of him with truth, that notwithstanding the disadvantages of his situation, so far removed from intercourse with the learned world, he has done much for science. He has corrected many errors in this part of zoology, especially as to the specific marks, faculties and manners of the animals. His work makes us better acquainted with the shapes and ways of life of several whose descriptions were hitherto imperfect, and of others which we knew only from bad figures, or scarcely any other way than by name. And, in addition to all this, he has made us acquainted with a considerable number of creatures hitherto unknown to naturalists, belonging to important genera, and among which we should hardly have expected new species. Don D'A.'s work must therefore be ranked among the most valuable additions to the history of quadrupeds. As such, we doubt not, it will be considered by every discerning reader; though we think it likely every zoologist will regret, with ourselves, that a work of so much labour and correctness is wholly destitute of drawings and figures of the animals.

That we may afford a better idea of Don D'A.'s manner of writing, we translate his account of the *Vespertilio Spectrum* or *Vampire*, about which a great many exaggerated stories have been told, vol. ii. p. 273. "I have had a great number of these vampires. They all very much resembled each other; but they differ from every other species of bats, in being able, when put upon the ground, to run almost as fast as a rat, and in being very fond of sucking blood. Sometimes they bite the combs and gills of poultry when asleep, and extract the blood. This operation generally kills the poultry, in consequence of a gangrene which takes place in the wounds. They likewise bite horses, mules, asses and neat cattle generally on the buttocks, shoulders or neck, because they find it easy in those parts to hold on by the mane or tail.

"Man himself is not exempted from their attacks, and to this point I can bear witness positively, because I have been bitten by them four times on the ends of my toes, while I was asleep in the huts of the open country. The wounds which they made without my being sensible of them, were circular or elliptical, of a line or a line and an half diameter, but so superficial that they did not pierce quite through the skin; and it was evident they were made by taking up a small mouthful, and not by making a puncture, as might have been supposed. Besides the blood which they sucked, that which ran out might have amounted to half an ounce, when I was bitten the worst; but as the quantity lost by horses and cattle is about three ounces, and as the hides of these creatures are very thick, there is reason to believe the wounds inflicted upon them are larger and deeper. The blood is drawn neither from veins or arteries, because the wounds do not penetrate so deep, but from the capillary vessels of the skin, from which the Vampires obtain it, undoubtedly by sucking or licking.

"Although my wounds were painful for several days, they were of so little importance that I applied no remedy whatever to them.

"For this reason, and because these wounds are not dangerous, and because also vampires only make them during the night when they are in want of other food, no body in these parts is afraid of them, or troubles himself about them, notwithstanding the report concerning some of them, who, the better to obtund feeling in their victim, fan and refresh with their wings the part which they intend to bite and suck.

"Length, two inches and three-fourths; tail, none; breadth,

fifteen inches and three-fourths; colour brown, somewhat lighter beneath; membrane of the wing extends to the tibia, within four lines from its articulation; ear sharp, straight, eight lines from the tip to the base, and within it another small ear which projects very little; the mouth is rather sharp than flat, and on the end of the muzzle is a double membrane, terminating in two points above, and in these points are the nostrils. The lower jaw pits a little, and the physiognomy is remarkably ugly.

"Buffon calls this bat the *Vampire*, and as he never saw it, he relates what he has read in a great many books. As to what they have told of the bigness and manners of this bat, the accounts are so enormously exaggerated and full of lies, that I shall not refute them one by one, but rely upon the faithfulness of my description to dissipate all the falsehoods which have been written on the subject of this animal."

The most ingenious, and perhaps the most laboured part of Don D'A.'s work, is his disquisition on the complexion and configuration of the skin and hair of animals. In this discussion he denies the fashionable philosophy which ascribes the colour of the external parts to the operation of climate. He avers, that climate is incapable of accounting for the peculiar hue of Albinos, and for a multitude of other appearances which have been usually ascribed to it. Instead of referring almost every thing on the subject to climate, he traces the variegated forms of the hair, skin, and exterior parts of man and other animals, to a generative agency, or operation coeval with the production of the creature. When this cause produces an alteration upon the embryo, fœtus, or older animal, so as to render the skin of a black, white, or other variety of colour, he calls it *Albinage*. When this internal cause manifests itself by frizzling and curling the hair and feathers, he terms it *Crispation*. And when the same constitutional change shows itself by a loss of hair or plumage, so as to leave a naked skin, he distinguishes it by the name of *Peeling*. Of these three effects, the last occurs but seldom, the second pretty often, and the first is very frequent indeed, showing that it is a much more difficult process for nature to eradicate hair or feathers than to curl them, and more difficult to twist them than to change their colour. But these three accidents may befall every man, every quadruped, and every bird, to a greater degree in some than in others, and become permanent in the race by propagation from one generation to another without end. In

addition to these three causes, he ascribes prodigious effects in changing the habits, shapes, colours, and dimensions of animals, to *domestication* and the *hand of man*. The author has treated at large on this subject, and urged many cogent reasons in favour of each of his opinions, between the 319th and 339th pages of his second volume. In the course of an elaborate argument, he has shown that a man and woman may beget a child of a different complexion from either of the parents, and that the complexion of this offspring may be perpetuated in his or her descendants. In this way he gives the philosophers their choice, in supposing our first parents to have been either of black or white complexions. If the former supposition be adopted, then it is only necessary to say, that at some time or other, by means of the process of Albinage, two of their descendants produced a white child; and if the latter hypothesis be taken, it is enough merely to affirm, that by the same agency black, tawny, or olive offspring might have proceeded from white parents. And in both cases, the new colour, when imprinted on the individual, be it what it might, would be continued to his or her descendants. But we forbear a more minute examination of this curious argument. Suffice it to observe, that the author has adduced many facts and striking considerations in favour of his doctrine, and that they are well deserving of examination by all the speculative reasoners who call in the aid of climate to explain almost every thing that they do not understand. Though he does not reject altogether the operation of climate, he is clearly of opinion it is the most feeble and least influential of all the enumerated causes.

The accounts of the domestic animals of Europe, which have been turned out in the woods, and have increased to almost countless numbers, are written in engaging terms. The manners of the untamed horses in vol. ii, p. 298, the cruelty practised to asses, p. 343, some singular proceedings relative to the breeding of mules, p. 347, and the mode of killing cattle for their hides and tallow, p. 370, are topics which the author has treated like a man who had beheld what he describes. He relates, in several places, the wonderful dexterity and surprising skill of the Spanish and Indian hunters in throwing the noose around deer, jaguars, horned cattle, and even men, so as to entangle and catch them in the most complete and effectual manner. We, however, restrain ourselves from going further into particulars, concerning a publication on natural history, which studious zoologists will be careful to peruse at full length in the original.

ART. 3. *An historical Sketch, to the End of the Revolutionary War, of the Life of Silas Talbot, Esq. of the State of Rhode-Island, late Commander of the United States Frigate the Constitution, and of an American Squadron in the West-Indies.* 12mo. pp. 147. New-York. Caritat. 1803.

BRAVERY and patriotism are distinguishing traits in the character of this revolutionary officer. But it is not our intention to follow him through all his grades of promotion, and hazards of service in the capacity of Captain, Major, and Lieutenant-Colonel successively in the army, and afterwards of a Captain in the navy of the United States. Our reason for mentioning this piece of biography is, that Captain Talbot was captured by the British in 1780, with the privateer which he commanded, and sent for confinement to the dreadful prison-ship *Jersey*, lying at Wallabout, in the harbour of New-York, then in possession of the enemy.

Captain Talbot, and Captain Freneau, (who also endured severe hardships on board the prison ships and hospital ships during his captivity), have given a striking account of what they and their associates underwent in these mansions of misery and nurseries of death; containing a faithful record of the sufferings of some thousands of our most enterprising youth, sinking under the cruelty of an unrelenting foe. The narrative serves to show the local origin of malignant fevers in places where men are crowded thick together for a considerable time; and calls loudly upon the nation that complains of the imprisonment of its subjects in the black hole of Calcutta, to recollect the incomparably greater horrors of her pestilential prison-ships at New-York.

We give the account of the place of confinement in the words of the writer, who is reputed to be Mr. Benjamin Taylor. (p. 106.)

“The establishing of prison ships will be an everlasting dishonour to this war. The *Jersey* was a very large and roomy vessel; she had once carried seventy-four guns, but was now stripped of every thing warlike, and reduced to a naked hulk. All her ports were close shut and secured, which effectually prevented any current of fresh air between decks, where the prisoners were all shut down from sun-set to sun-rise, and, during these melancholy hours, all access

to, or intercourse with the upper deck, was prohibited. She had a guard on board, which were forbidden, on pain of severe punishment, to relieve the wants of any distressed prisoner; and was anchored in a solitary nook, called the Wallabout, where, at low water, her rotten remains are still to be seen, and was made to be, not only the dungeon, but the death of many brave men.

"There were confined at this time, in this much-dreaded hulk, about eleven hundred prisoners. No births were constructed for them to lie down in, nor a bench to sit upon. Many were almost without clothes. The dysentery, fever, phrenzy, and despair, prevailed among them, and filled the place with filth, disgust, and horror. The scantiness of the allowance, the bad quality of the provisions,* the brutality of the guards, and the sick, pining for comforts they could not obtain, altogether furnished continually one of the greatest scenes of human distress and misery ever beheld.† It was now the middle of October, and the weather was cool and dry, with frosty nights, so that the number of deaths per day were reduced, while Captain Talbot was on board, to an average of *ten*; and this number was considered by the survivors but a small one, when compared with the terrible mortality that had prevailed in the ship for three months before. The human bones and skulls,‡ yet bleaching on the

* "The Editor has great reason to believe that the bad quality of the provisions furnished to the prisoners, which was complained of with so much justice, is not to be always charged to the enemy, to scarcity or to the war; but frequently to the inexorable rapacity of commissaries, contractors, &c.

† "Two young men, brothers, belonging to a rifle corps, were unfortunately made prisoners, and sent together on board the *Jersey*. The elder took the fever, and in a few days became delirious. One night (his end was fast approaching) he became calm and sensible, and lamenting his hard fate, and the absence of his beloved mother, begged for a little water. His brother, with tears, intreated the guard to give him some, but in vain. The sick youth was soon in his last struggles. The other, in this distress, offered the guard a guinea for an inch of candle, only that he might see him die; and even this was refused.—The language of the survivor expresses the irresistible sentiments of nature and humanity. "*Now,*" says he, drying up his tears, "*if it please God I ever regain my liberty, I'll be a most bitter enemy!*"—This awful appeal was not in vain. He regained his liberty—he rejoined the army—and when the war ended, he returned home in triumph, with eight large, and one hundred and twenty-seven small notches on the stock of his rifle!!—*A tremendous, but just revenge!*

‡ "The reader will be pleased to learn, that the human bones scattered on the shore of Long-Island have, at length, attracted the public attention; and that the American government, consistently with that just policy which ought to characterize every civilized nation, is about to employ the mo-

shore of Long-Island, and daily exposed, by the falling down of the high bank on which the prisoners were buried, is a shocking sight, and manifestly demonstrates that the *Jersy prison-ship* had been as destructive as a field of battle."

The following narrative of Captain T.'s sufferings on board the ship *Yarmouth*, and of the wretchedness of his fellow-prisoners on their passage to England, shows how crowded places grow nasty, how nastiness turns to pestilence, and how pestilence embitters the miseries of war. (p. 128.)

"At the end of about three weeks, Captain Talbot, with seventy-one other officers of various grades,* selected from different prisons, but all seamen of the first rate, were marched early one morning, under a guard, from the *Provost* to

ments of peace in alleviating some of the miseries of war. In the House of Representatives of the United States, on the 10th of February, 1803, Dr. MITCHELL presented a petition from a number of the citizens of New-York, stating, amongst other things, that great quantities of these bones had been collected and interred by a gentleman in the neighbourhood,* and praying Congress to cause a monument to be erected to the memory of the brave and unfortunate men who perished on board the British prison ships. The petition was referred to a committee on the subject of monuments, and it is believed will pass into a law."

This memorial was introduced with some descriptive and historical remarks, on the hard and untimely fate of those prisoners of war; and the entry thereof on the Journal of the House of Representatives was made by Mr. Beckley, the Clerk, in the following remarkable words: "A memorial of sundry citizens of the United States, and inhabitants of the city and state of New-York, was presented to the House and read, praying that a monument may be erected to perpetuate the memory of a number of American citizens who perished on board of the British prison ships, or who were slain in defence of their country during the revolutionary war; the bones and other remains of whom have been, and still are daily seen at and near the site of the present Navy-yard of the United States in the vicinity of the said city, scarce earthed in the falling banks, or exposed on the naked shores." Since the invention of the arts of printing with types and engraved copper-plates, there seems to be little need of incumbering the earth with monumental stones and edifices. These are Gothic symbols, and can be seen but by the few who visit them; whereas books and prints are distributed over all the civilized world, and may be examined by every reader in his own house. Though Congress has not appropriated money to construct a monument over these human remains, yet that page of the Journal, or even this page of the *Medical Repository*, may be considered as the slab, and the words we have transcribed, the inscription, perpetuating the remembrance of those revolutionary victims. Thus, without perishable marble, or any other stone, the press, in a more effectual manner, diffuses and perpetuates their fame. Indeed, he who wishes to be known or respected by distant generations, must expect that distinction not from tomb stones, and such frail works as scarcely outlive a century, but from the press, which publishes and renews its works as often as is necessary.

* John Jackson, Esq.

the water side, whence they were carried and put on board the *Yarmouth*, an old ship of sixty-four guns, commanded by Captain, now Admiral Lutwidge, which was ready to sail for Europe. It was in the month of November, 1780. The morning, as well as the whole of the day, was very cold, with frequent snow and hail. Many of the prisoners had lost great part of their clothes when they were captured, and from long confinement were in a miserable plight. They were, nevertheless, all kept together on the poop-deck till night, without either victuals or drink, in consequence of which many were ready to perish with hunger and cold. At night they were all ordered down into a place that had been expressly prepared for them in the hold, under the after-orlop-deck. The floor of this place was loose boards and planks, laid over casks of old and decayed provisions. It was extended across the hold from side to side, was about sixteen feet wide, and the deck over it so very low, they were obliged to kneel, or sit down, in order that they might hold up their heads. They had no light nor air, but what came down the scuttle, and that was so small as to admit of but one prisoner at a time to ascend or descend. When they were all down, they found their dungeon so small, that they were obliged to lie partly one upon another. This *Black-Hole* was so contracted, and so far below the surface of the water, that notwithstanding the cold on deck, they were soon obliged to throw off all their clothes here, and this was succeeded by a profuse perspiration. Their situation, in a few hours, became most dismal and distressing. Long before morning arrived, the cry of "*Water! for God's sake, Water!*"—was become general; but none was offered them, nor any notice taken of their cries until about the middle of the next day, when a round bottle full, at the end of a line, was passed down to them from the scuttle, at the sight of which, every prisoner, impelled by the pain of intolerable thirst, exerted himself to the utmost to lay hold of it; and he who got hold of it, could scarce touch it with his lips, before it was violently snatched away by others.—There is no friendship among men in extreme distress. In this ravenous manner was the scramble kept up, till every drop was expended, and then the cry of "*Water!—Water!*"—was again renewed, and the same distressing scene of delirious violence and impatience repeated whenever a bottle was passed down to them. Permission was given in the afternoon for one prisoner at a time to come up from their dun-

geon, for the purpose of going to the head of the ship; but, as he who was so happy as to be up would make his visit as long as possible, on account of the fresh air, and it being a matter of indifference to the centinel whether he continued longer than necessary, but a part of their unhappy number could gain the upper-deck in the course of a whole day, consequently many were compelled to do the indispensable offices of nature in the place of their confinement. This, in a few days, produced the most abominable stench that can be imagined.

“Lieutenant *Tireman*, the second officer on board, having the principal direction of the ship, seemed indifferent about the fate of these unfortunate men, or rather disposed to make their captivity, while on board the *Yarmouth*, as bitter as possible. The more they suffered, the more those sufferings were contrived to be aggravated. In a short time this inhuman treatment produced among the prisoners what might be expected—a *malignant fever*. Those who sickened were, the third day, generally seized with delirium, and expired raving and exhausted by the fifth. ‘They are *rebels*, let them suffer!’ was the only answer they could, for a long time, get to their petitions. Seventeen of these unhappy men, the victims of despotic power and deliberate cruelty, breathed their last in this deplorable situation, and were entombed in the deep. The survivors, finding no redress to their complaints, expecting every day to follow their dead companions, and fearing nothing worse than what they had for some time daily experienced, out of despair and rage, abused such of the officers of the ship as came within the sound of their voices, with the most provoking language they could invent; in return for which abuse, the under officers, that were birthed in the orlop, would, in contempt, sing “*Yankee Doodle*; and as that deck is never caulked, but the seams left open, they discharged their urine and hot water through them on the prisoners beneath. At length the air of this dungeon became so extremely foul and infectious, that some of the ship’s company were seized with the same fever that prevailed among the prisoners. At the end of three weeks, one of the Lieutenants of the *Yarmouth*, that went down into their dismal mansion with the carpenter to stop a leak, caught the fever and died, as did several of the centinels posted over the scuttle. These circumstances alarmed the whole crew; and the surgeon reported to the Captain, ‘That unless the American prisoners were

speedily removed, and their place of confinement cleansed and sweetened, he should not be surprised if the fever, in the course of a few days, spread through the ship, and carried off a great part of her hands.'—Fear will make wolves relent. Lieutenant *Tireman*, in consequence of this report, ordered all the prisoners on the upper gun deck; but a great part of them were by this time so far reduced as not to be able to get up without assistance. A party was then ordered to haul them up, and they were laid upon the bare deck till hammocks for their reception were slung *under the fore-castle, on each side of the galley, and directly over the hog-pens!* Into these hammocks, which were hung so low as but just to clear the backs of the hogs, the most sick and feeble of the prisoners were conveyed. Thus, to vary, and not lessen their sufferings, were these unfortunate men taken out of a close and hot dungeon, where they had been reduced by heat and sickness, and hung in hammocks in the open air, in a winter passage, in the month of December, over a crowd of growling hogs, under the fore-castle of a ship of sixty-four guns, without other warmth than their scanty bedding, and the smoke and steams of the galley, in which they were almost constantly enveloped! While these hitherto unheard-of accommodations were preparing for the sick, another party was employed to burn kettles of tar, sulphur, and tobacco, in the place where they had been confined; and, in the evening, all the prisoners that were able were ordered down again into their old birth; but, for the remainder of the passage, they were permitted, whenever they chose, to come on the gun-deck in the day time, and to stay or return, as they pleased, till night came on. The *Yarmouth*, it has been observed, was an old ship. She leaked so much that it was necessary to keep her pumps continually going. This circumstance of her leaking prevented any press of sail being put upon her, which prolonged the passage to seven weeks before she arrived at Plymouth. The prisoners were here transferred to the *Cambridge*, an old three decker, called the guard-ship. It was hardly possible for men to exhibit a more miserable, reduced, and loathsome appearance than these American officers, when they were transferred from the *Yarmouth* to the *Cambridge*. The winter at the time was very severe with frost and snow. Many of them having lost their spare clothes when they were captured, had now scarce any thing left wherewith to hide their nakedness: and having been long confined in a situa-

tion where they could not cleanse themselves, their bodies were covered with vermin. Those who had been sick of fever lost all their hair, so that their heads were as bare as their hands. A considerable number of them were so feeble, they could not stand without support, and were obliged to be hoisted out of one vessel into another. The Cambridge was commanded by a Lieutenant, a jolly fellow, who appeared to be a lover of grog and good living. When he mustered the prisoners, and called over their names, he swore, "*they were a d—d miserable set as he ever saw in his life, and deserved to be all sent back again to their HANCOCK and ADAMS!*" In a day or two Captain Talbot, with the rest of the sick, was removed to the hospital-ship, on board of which he remained some weeks before he recovered. Several of the nurses caught this fever and died. The doctor of this ship was a surly old man. He and his servant, attended by one of the nurses, an old woman, came together every morning to visit them. There were about thirty sick in the same apartment with Captain Talbot; and they were all attended to in a very short space of time by the following arrangement. The nurse carried a small tin-cup, and a large glass-bottle, like a porter-bottle, filled with what was called *solution*. The Doctor's servant carried a tin-bason, in which was what they called *bolus*. When the Doctor thus attended, came to a sick man—"Well, how is it?"—"I am very sick."—"Give him the solution!"—To the next—"How are you?"—"Very sick."—"Tip him the bolus!"

When thus fevers are engendered on ship-board from local causes existing within the vessel, it is surprizing that there should have been so long and pernicious a mistake entertained in the civilized world, of their being imported from one country to another.

ART. 4. *The Mathematical Correspondent; containing new Elucidations, Discoveries, and Improvements in various Branches of the Mathematics; with Collections of Mathematical Questions resolved by ingenious Correspondents.* 12mo. pp. 116. New-York. Sage and Clough, T. and J. Swords. 1804, 1805.

AS there is no science which surpasses Mathematics in the certainty of its evidence and the usefulness of its applications, so perhaps there is none which takes firmer

possession of the mind, or excites more the zeal and enthusiasm of its votaries. Nor is the love for this attractive science difficult to be accounted for, when it is considered that it is, in reality, but the love of truth. Of this the charms are so transcendent, that it has been personified and pictured to the mind as a celestial nymph or cherub, so fair and so alluring, that no rational creature could withstand her influence.

It has also been compared to a conquering hero or warrior, who, with a force too mighty to be resisted, bears down or overcomes all before him. It has, at other times, been likened to light which, when no cloud or other obstacle interposes, and the organ of vision is sound, presents to the mind ideas of the surrounding objects, too plainly to be either denied or disputed,

Such being the beauty, force, and clearness of truth, the greatest subject of admiration which presents itself to us is, not that its sway is so extensive as we find it, but wherefore it comes to pass that its reign is not absolute and universal. But whatever doubt or error may prevail in other branches of human knowledge, *Mathesis* and *Truth* have long been intimately connected. Whether the two associates combine and organize numbers in arithmetic; measure, and calculate lines, surfaces or solids in geometry; analyze and compare sums and quantities in algebra; investigate motions and velocities in fluxions; calculate times, periods, and distances in astronomy; or invent curious theorems, by the process of pure intellect; in each and all these cases, and in every other that might be mentioned, truth bestows a wonderful and bewitching grace upon mathematics.

We find by the work before us, that a taste for mathematical recreations has manifested itself for a twelvemonth or more among our fellow-citizens. Five numbers of the *Correspondent* are now displayed on our table. They were published in succession quarter-yearly, and each consists of one sheet, 12mo. or about twenty-four pages. The chief subjects treated of may be divided into two sections: 1. *Memoirs or Essays*; and, 2. *Questions with their Answers*. Of the former we notice with pleasure, an ingenious *elucidation of the principles of the rule of proportion, applied to the resolution of practical questions, and to the invention of general rules for making calculations* (p. 1—15, and p. 30—40); *an able disquisition on the definition of the word "Power," in arithmetic and algebra*, (p. 59—66); and an instructive

inquiry respecting the true definit on of proportional numbers, (p. 86—89); all by Mr. George Baron, of New-York. And *an elaborate disquisition concerning the motion of a ship which is steered on a given point of the compass,* by Mr. Robert Adrain, of York, in Pennsylvania, (p. 103—114).

We observe problems and propositions on different subjects offered and solved by Mr. W. Elliot, Mr. R. Tagart, and Mr. James Temple, of New-York. Queries and their answers are numerous, and constitute a leading and distinguished part of the work. Among those who have seemed to us more particularly eminent in propounding and resolving mathematical questions are, (in addition to the gentlemen already noticed) Messrs. John Capp, James M'Cormic, John Coope, John D. Craig, W. Lenhart, J. M'Ginness, James North, R. Patterson, jun. J. Romer, J. Smithis, and T. Whittaker, of Pennsylvania; John Craggs, of Virginia; Rev. T. P. Irving, of North-Carolina; Thomas Maughan, of Quebec; Walter Folger, jun. and Titus Youle, of Massachusetts; Joseph M. White, and Ebenezer R. White, of Connecticut; Noah Young, of Kentucky; John Johnson, of Vermont; William Thompson, of South-Carolina; and Niel Gray, William Green, Samuel Moor, Alexander Walsh, and A. Rabbit, of New-York.

Mr. Baron, who takes a very leading and active part in the work, offers, together with his associates, from time to time, a *prize-question*. One of these prize-medals, of the value of six dollars, has been adjudged to Mr. Adrain; one to Mr. Temple; one to Mr. Maughan; and one to Mr. Craig; for their respective satisfactory answers to the queries proposed.

We notice with respect the names and labours of this cluster of mathematicians. It is to be hoped their example will be imitated by many of our rising youth. Happy indeed is the reflection, that intellectual pleasures are gaining an ascendancy over those of a sensual kind, and that as society progresses in cultivation and refinement, the individuals who compose it may be expected, in greater proportion, to abandon vulgar amusements, and betake themselves to the exalted exercises of the understanding.

ART. 5. *Dissertation sur la Fievre jaune qui regna a Philadelphie en 1793, depuis le mois d'Août jusques vers le milieu du mois de Decembre; par Jean Deveze, ancien Chirurgien du Cap-François, ex-Chirurgien-major-general des Troupes nationales de la Province du nord de Saint Domingue, ancien Medecin en Chef de l'Hopital de Bush-Hill, &c. &c. &c. i. e. A Dissertation on the Yellow Fever which prevailed at Philadelphia, in 1793, from the Month of August until the Middle of December; by John Deveze, formerly Surgeon at Cape-François, ex-Surgeon-general of the national Troops in the northern Division of St. Domingo, late chief Physician of the Bush-Hill Hospital, &c. &c. &c. 8vo. pp. 96. Paris. Huzard. (An. xii.) 1804.*

FROM a physician of reputation and experience, who bore the brunt of medical service at Philadelphia during the calamitous season of 1793, something instructive would naturally be expected. A professional man, who had practised in the West-Indies, and who was, on his arrival upon the shores of the Delaware, almost immediately employed in prescribing for those who were languishing under one of the most mortal of distempers, may be reasonably expected to give his readers genuine information. The piece under consideration contains the practical experience of the author, stated in concise but sententious terms. Short as it is, we consider it a sound performance, and remarkable for comprehending, not the hypothetical opinions of the writer, nor the laboured recital of what other authors have offered on the disease of which he treats, but a plain and perspicuous narrative of the occurrences of which he was himself the witness, and in which he was an actor. It is therefore worthy of notice and consideration, as being one of the earliest documents we possess concerning Yellow Fever.

The first edition of this publication appeared in Philadelphia in 1794. The author has now given a new one in Paris. He seems, however, to have made very little alteration in it. To this he has been prompted, in all probability, by the solicitude felt on the other side of the Atlantic, by reason of the prevalence and mortality of Yellow Fever in Italy, Spain, and other places. But in reading it, we find few traces of the great developments made in America concerning Yellow Fever within the last seven or eight years.

The publication will however serve a good purpose in Europe, where they are so much in arrears.

Dr. Deveze relates, how, fleeing from the ruins of Cape-François, he arrived at Philadelphia at the moment that the destructive endemic prevailed; how the College of Physicians assured the magistrates, that it was both malignant and contagious; how some individuals of the profession declared it to be essentially mortal; what terror and consternation prevailed; what marks were put upon sickly houses and districts; what hospitals and physicians were procured for the sick; that the merchants, the officers of government, and the foreign residents, all fled for the purposes of self-preservation; that servants forsook their masters, friends avoided each other; children shunned their fathers and mothers, and parents abandoned their offspring; and that that lively and flourishing city was transformed into a vast grave, where silence was interrupted only by the cries of grief and despair.

He tells how, notwithstanding his candid and avowed difference of opinion with the College of Physicians, he was employed by the committee of superintendence to take charge of the Bush-hill hospital; how he produced conclusive facts, showing the distemper to be neither contagious nor necessarily fatal, and demonstrated that their system of preventive means was dangerous and wrong; how the physicians already engaged withdrew on his approach, and left him the sole direction; and how he proceeded, with the aid of Dr. Duffield, to form and execute his arrangements for combating the disease. All his practice and observations in St. Domingo, as well as in Pennsylvania, tended but to convince him that the causes of the distemper were local; that it was not contagious, consequently was not imported; and that it was by no means always destructive of life. He even had the courage to write an impressive and judicious letter to Governor Mifflin, on the prevailing mistakes of the Philadelphians at that time. After an interval of twelve years, we look back to this letter, and the pamphlet then published by Dr. D. with pleasure, on account of the instruction they afford, and with surprise at the independence which they manifest.

He commences his dissertation with a topographical description of Philadelphia, which, though it might have been correct when written in 1794, varies widely from the present condition of that beautiful town.

The author then proceeds to treat of the medical constitution of the season, and of the antecedent diseases. He afterwards describes the three stages of Yellow Fever. After which he goes on to deliver his opinion on its prognosis and termination. Proceeding to an examination of the causes of the malady, he decides that they are local, derived partly from the variableness of the atmosphere, and its contamination with septic exhalations; and partly from popular errors in diet, and the manner of living. In his 44th page, Dr. D. proceeds to an exhibition of the proofs, showing that Yellow Fever is neither imported nor contagious. These we should have translated for the satisfaction of our readers, did not our limits forbid the insertion of the lengthy discussion contained between the 44th and 52d pages.

The distemper invaded all kinds of people, and of all ages, sexes and conditions; though it was more destructive among people of full age than among the old and the infantile. Women suffered less than men. Though the rich were attacked as well as the poor, yet the latter were more particularly afflicted on account of their residence in the most unclean and unhealthy situations. Persons accustomed to the climate of the West-Indies, by long residence, were exempted from attacks of the Yellow Fever. He never saw the disease among the Creoles, or in individuals habituated to southern regions.

The author considers, in the next place, the treatment of the disease. This he divides into three periods, corresponding with its three stages. After which he details nine practical cases of persons labouring under the disease, and relates the morbid appearances on examining bodies after death. Having thus delivered the fruits of his experience and knowledge concerning Yellow Fever, Dr. D. treats of the mode of prevention. This he divides into two parts, *public hygiene*, or the prophylactic means to be adopted by the police, and *private hygiene*, or that part of the preventative plan which individuals ought to enforce. To the first head belong the planting of trees, the introduction of pure fountain water, the discontinuance of interring the dead within the city, the forbiddance of unhealthy trades, the cleansing of holes and alleys, the filling up of ponds and stagnant puddles, the removal of nuisances from quays and docks, the draining of low grounds, the regulation of the markets, and the government of practitioners of physic when the fever makes its appearance. The second head embraces the better prepara-

tion of bread, the boiling of meat with legumes to make broths, the avoiding of all unripe fruit, the discontinuance of eating such enormous quantities of fresh meat and salt fish, diminishing the abuse of coffee and tea, abandoning of pump-water, diminishing the quantity of spirituous and heating liquors, guarding against night air during sleep, washing the mouth morning and evening with oxycrate, frequent changes of bed and body clothes, free use of bathing, a more discreet adopting of clothing to the variable state of atmosphere, changing clothes when they are wet or damp, keeping up their spirits, and being of good cheer, and some other points of diet and regimen.

He closes with ten aphorisms. The more prominent of these are, that the Yellow Fever was endemico-epidemic at Philadelphia, was neither imported nor contagious, and that yellowness was not a pathognomonic symptom. In short, this publication is worthy to be read, both by physicians and city-magistrates, *especially* among the Christian nations, where the subject seems to be embarrassed with *peculiar* difficulties.

ART. 6. *Charter and Bye-laws of the New-York Dispensary, instituted in 1790.* 12mo. pp. 36. *New-York.* Southwick and Hardcastle. 1805.

BY this little publication it appears, that a public Dispensary was established in the city of New-York in 1790, that it was incorporated by the legislature of the State in 1795, and enlarged by the addition of a Kine-pock-establishment in 1805.

Although the City-Hospital, the Alms-House, and the Lying-in-Hospital, receive and provide for a great number of the suffering poor, yet there are plenty of subjects for the relief which a Dispensary affords. For while the former institutions are more especially frequented by those who are deprived of every domestic accommodation, the Dispensary offers help to that class of the necessitous, who being house-keepers, are no sooner disabled by disease from the performance of daily labour, than they are also incapacitated to pay a physician for attending them, and supplying them with medicines.

Poor and disabled mechanics, tradesmen or labourers,

who cannot without great additional distress, leave their families to reside in an Hospital; mothers who cannot conveniently leave their children; infants who require the constant care of their parents; and, in short, a large proportion of those who labour under obstinate chronic diseases, are in a particular manner the objects of Dispensary practice. For these purposes the Trustees have divided the city into four districts, and appointed a physician, with a salary to each. And they have put the Kine-pock-establishment under the management and superintendence of a fifth.

We regret that there is no account of the number of persons comforted by the benevolent provision of this Dispensary; nor of the diseases they endured; nor of the countries whence they came; nor of the sums expended. But we observe the form of an address recommended by the Trustees, to be adopted by Clergymen at the baptism of infants, which we copy for the sake of making it more extensively known, (p. 25.)

“ You who are parents must feel yourselves not less bound by religion, than prompted by affection, to guard your child from every impending evil, and especially from infectious diseases endangering its life. No human malady can give more serious cause of alarm than the Small-pox. When taken in the natural way, it is, as you well know, violent, painful, and often fatal. Even in those who recover from it, the countenance is permanently disfigured, or the constitution receives some irretrievable injury, by loss of sight, deafness, tedious ulcers, white swellings, consumption, &c. In the Small-pox communicated by inoculation, there is certainly less danger; but notwithstanding every precaution, the inoculated Small-pox has, in many cases, proved fatal; and it is further highly objectionable, since, by spreading infection, it endangers the lives of all persons in the neighbourhood, who have not previously had the disease. A mild and certain preventive of the Small-pox was a few years ago providentially discovered by the Jennerian Inoculation of the Cow-pock. This, after the strictest inquiry, has been approved, and is now extensively practised in most parts of the world. The new inoculation may be safely performed at every season of the year, and at every period of life, since it occasions no material disorder, nor is attended with any danger whatever. At the same time that no infection is communicable from the persons inoculated to others with whom they have intercourse, it never excites in the constitution the

dreadful maladies above-mentioned, which so frequently succeed both the natural and inoculated Small-pox.

“ That you might not remain ignorant of so inestimable a blessing, this short statement is addressed to you ; and as you value the life of your infant, and the safety of your neighbourhood, you will immediately avail yourselves of the advantage offered to you ; for doubly poignant must be your sorrow, if by neglecting so to do, your child should perish, or be materially injured by the Small-pox.”



MEDICAL & PHILOSOPHICAL NEWS.

DOMESTIC.

Caverns in Virginia, Kentucky, and Tennessee, which afford an inexhaustible Supply of Salt-Petre.

IN some of the mountainous parts of Virginia, Kentucky, and Tennessee, the strata consist chiefly of lime-stone. These vast masses of calcareous matter contain numerous caves. These are of various shapes and sizes; for while certain of them extend but a few rods, there are others which may be traced, by aid of candles, for half a mile and more. From a low and narrow entrance, the caverns sometimes enlarge to a great width and height, and wind and branch curiously through the rocks. Generally they are dry, though a few of them are penetrated by rains or crossed by brooks.

These cavities in the calcareous mountains are famous for affording an earthy substance, which is useful in the manufacture of salt-petre. This earth lies in the bottom of the caves, and its thickness is from two to twenty feet. It is said to resemble black-mould or soil. Crystals of salt-petre can be frequently seen in it as soon as it is carried out to the light. But if this material be united with a sufficient quantity of pot-ash prepared on the spot from burned wood, there is produced a copious supply of salt-petre. It is computed that there are several of these dark recesses among the lime-stone mountains, which will afford ten thousand pounds each of this neutral salt, crystallized and fit for market.

When the earth has thus been leached with the vegetable alkali, and deprived of its acid, it is common with the workmen to replace it. For experience has taught them, that if put back again into its former situation, it renews its salt-petrous quality in about three years. Being impregnated after lying that duration of time with another supply of acid, it is fit to be treated once more with wood ashes, for the purpose of forming a second portion of salt-petre. There seems to be no end to the possible repetition of these processes, of extracting and regenerating the acid ingredient of the salt.

These caves are so numerous and extensive, and abound with such inexhaustible quantities of salt-petrous earth, that they can furnish the article to any amount that hunters and the militia may want in time of peace or the public defence require in case of war. In the mountains of the interior country, far removed from the invasion of an enemy, and conveniently disposed for the accommodation of the eastern and western states, are these vast magazines of salt-petre, which though triennially exhausted, are capable of re-producing a new supply.

Already has salt-petre of this domestic manufactory been sent from Nashville to New-York; already have contracts been offered to the government for the delivery of any quantity that may be necessary for the public service; and already are the neighbouring inhabitants so expert in turning it to gun-powder, that in Tennessee this latter article is sold by retail to shooters at thirty-seven cents and an half, or three-eighths of a dollar the pound.

Men of science may theorize and speculate on these remarkable facts. It seems difficult, in the present state of our knowledge, to explain how either the acid or the alkali should be spontaneously formed by synthesis, in these dark and rocky caverns. But before this can be done, we must acquire a knowledge both of the acid and alkali which constitute salt-petre, much more intimate and profound than the modern chemists possess.

The greatest Lead Mines in the World existing in Upper Louisiana.

When Captain Lewis set out on his expedition up the Missouri, the President of the United States instructed him to make all possible inquiries relative to the natural history and productions of the regions through which he should pass. Accordingly, he requested Captain Amos Stoddard, the first civil commandant of Upper Louisiana, to procure a description of the lead mines situated in that country. This officer made application to Moses Austin, Esq. the proprietor of an extensive mine of this metal, which he has worked for several years. Mr. Austin, who was deemed the most experienced and judicious man on such subjects then in that quarter, wrote a dissertation on the native lead of Louisiana. This he addressed to Captain Stoddard, who forwarded it to Mr. Jefferson, and by him it was laid before

Congress, at their meeting in November, 1804, as one of the documents accompanying his message to both houses.

Mr. Austin's account of the mines makes a pamphlet of twenty-two pages. They are ten in number; to wit, the mine a Burton, mine a Robuna, Old Mines, Mine Rain-ault, mine a Maneto, mine a la Plate, mine a Joe, mine a Lanye, mine a la Motte, and mine a Gerbone. The *old* mines are said to have been opened in 1726, by Mr. Rain-ault, who explored this region for the famous Law, and his Mississippi company.

The mine a Burton, discovered by Francis Burton in 1763, is situated thirty-eight miles west-north-west of St. Genevieve; and the rest of the mines around it in different directions, to the distance of from two to thirty miles.

The specimens of the ore which we have seen are Galenas. The quantity of these minerals thereabout is greater than perhaps any part of the known world affords. For twelve or fifteen miles around the Burton-mine, there are strong appearances of ore. About two hundred miles up the river Merimak, valuable lead mines have been discovered. Throughout the whole district, the galena is found in the greatest abundance, and gathered with uncommon ease. Already the lead afforded by the mines is amply sufficient for the domestic consumption of the people who live in or near the waters of the Mississippi, the Ohio, and, in short, for the inhabitants of all the western states and territories. And there can be no doubt that as soon as government shall ascertain titles, confirm possessions, and prevent the Osage Indians from plundering the miners, these grand and inexhaustible magazines may be made to supply not only all America, but all Europe, if necessary, with lead enough for every civil and military use. And it is believed when the country shall be further explored, many more discoveries of the same kind will be made. The aggregate value of the lead extracted from the mines, including that which was manufactured into shot and sheets, is estimated by Mr. Austin, to amount to an average of forty thousand dollars annually for the three last years.

Domestic Supply of Sulphur in New-York.

Brimstone has been discovered in Ontario County, (New-York). It is deposited from the water of a spring, which arises in the Genesee tract, about twelve miles north-west of Geneva. The stream is large enough to turn an over-shot

mill, and emits sulphureous steams which can be smelled, as Mr. Robert Munro relates, as they are wafted by the wind, to the distance of two miles. The water issues from the ground in different branches, and, adjoining the main fountain, are two bogs of sulphur, into which a stick may be thrust more than six feet deep. It is supposed that at this place, the collection and purification of the sulphur might be carried on to advantage. But whether this would be found to succeed in time of peace or not, there is this comfortable reflection, that in the accident of war, when there might be difficulty in procuring our usual supply from Italy and Sicily, the government might avail itself of this internal source, to enable our citizens the more effectually to practise the arts of defence.

Remarkable Effect of a Pregnant Mother's Imagination.
The following singular occurrence was communicated to Dr. Miller by Mr. Benjamin Taylor.

"A young married lady, pregnant with her second child, being with her parents at Brunswick, in New-Jersey, where it was fixed she should lie-in, when that time drew nigh she sent to New-York for her nurse, and having made every necessary preparation for the interesting moment, waited with tranquillity for a few days before it arrived. Nurses generally employ this time in tale-telling, gossiping, &c. The nurse in this case told, one afternoon, to the pregnant lady and her mother, how she had once nursed in the family of a Jew, and how she saw the little infant circumcised; and dwelt upon the description of the operation with great minuteness. The young lady sat and listened, and being very susceptible of sympathy, first shed tears, then fainted. A day or two afterwards she was delivered, after a very short labour, of a boy. All went on very well till the next day, when the nurse discovered that the child's prepuce was diseased. Dr. Scott, of Brunswick, was immediately sent for. He came, and, on examination, found *the whole of the foreskin destroyed by a sphacelus!*

"The above circumstance happened in the winter of 1798-9. The young lady, her husband and child all died in the course of the year."

Surprising Extrication of Inflammable Air.

Near one of the sources of Licking River, in Kentucky, there is a separation of phlogistous gas from something in

the interior strata of the earth, in greater quantity than is perhaps known in any part of the world. This light and inflammable fluid is discharged through water into the atmosphere. It bubbles incessantly through the centre of a muddy pool, of about two rods in diameter. The gas readily takes flame on burning gun-powder in it, or by the approach of any blazing body. The volume of it is so great, that a man who approached near enough to snap a pistol in it which he held in his hand, was suddenly enveloped in the flame, and sorely singed before he could escape. When set on fire, it burns with remarkable splendour and vehemence, not only for hours, but days and weeks in succession, mounting to the height of ten or twelve feet or more. The relator of this (Mr. Senator Breckinridge) was one of a party that encamped near this aerial fountain, on an excursion through the woods. They discovered, that after the inflammable air had been on fire for six or eight hours, the water of the pond was heated to an uncomfortable degree, and emitted copious exhalations; and the ebullition at the spot through which the air ascended was more vehement.

It was judged, that if the flame had been sufficiently continued, the water would have been made to boil, and all have been evaporated. Then the surrounding space would have been heated and dried. And, lastly, there was reason to suppose, that the feculent and carbonic matter in the bottom of the pond would have been put into a state of combustion. From the crater at the place through which the gas rose, and the excavation of the surrounding ground, it appeared as if this had really happened on some former occasion; and for fear the like might occur again, the gentlemen of the party extinguished the flame, by flapping, agitating, and dissipating it with green boughs, before the water arose to a temperature too hot to enable them to approach near enough for this purpose by wading into it. When once in a blaze, there seems to be no end to its burning, but the stop which a storm of wind and rain may put to it.

Proceedings in Scotland, caused by the Pestilential Condition of the Ships carrying Emigrants from the British Islands to America and elsewhere.

The recitals given in the Medical Repository, Hex. i. vol. v. p. 69 and 234, of the mortality occasioned by fevers engendered among passengers badly provided for, and too much crowded in transport ships, were extensively circulated

in the periodical publications of Great-Britain and Ireland. The sensation excited by the facts which we published, gave rise to the act of parliament, for the regulation of vessels carrying passengers to foreign parts, of which we gave an abstract in *Hcx.* ii. vol. i. p. 309. We have since observed some further proceedings in the Highland Society of Scotland. Of these we now give a sketch to our readers; that they may be informed of the sentiments prevailing there on the subject of emigration.

“ The thanks of the Society were, on motion, unanimously voted to the Lord Advocate of Scotland, for the trouble he had taken in preparing the bill lately carried through Parliament, ‘ For regulating the vessels carrying passengers from the united kingdom of Great-Britain and Ireland, to his Majesty’s plantations and settlements abroad, or to foreign parts, with respect to the number of such passengers ;’ and which the Society were sensible had been done by his Lordship with his usual ability.

“ On the thanks of the Society having been given to the Lord Advocate from the chair, his Lordship rose and stated, that he received with great satisfaction this mark of approbation from so distinguished a body as the Highland Society, and that they might rest assured of his best exertions at all times, to promote the great object of their institution, by supporting every measure calculated to increase the prosperity of the Highlands of Scotland. That in the share which he had taken in Parliament, in framing the act for the regulation of vessels carrying passengers from any part of the united kingdom to America, and other parts beyond seas, he had been actuated not by any wish to prevent persons from emigrating, who, from necessity, or from laudable ambition, were led to seek their fortunes abroad, but from the absolute necessity which he felt, upon common principles of humanity, to put a stop to the dreadful calamities to which numbers of deluded people had been exposed for some years past, in the course of their passage to America; that as he did not know whether the reports of the select committee of the House of Commons upon the state of the Highlands, and the evidence on which that committee proceeded, were yet in the hands of the members of the Society, he wished it to be known, that the numerous persons who have, for some years, gone through the Highlands seducing the inhabitants to emigrate to America, were not agents of landed proprietors there, who either had lands to dispose of to these poor

people, or who wished for their assistance in the cultivation of their own; on the contrary, that the greatest number of such persons who went about recruiting for emigrants, had, in most cases, no other object in view but the profit to arise from the freight of the ships, and, in too many cases, from the still more nefarious profit to arise from the saving of provisions by the death of the passengers on the voyage; and that instead of being able to procure allotments of land, or even *work* for those who survived the passage, they turned them adrift at the nearest port of America, often at a distance from that to which they had contracted to be carried, in the most hopeless state of poverty, and often reduced to the last extremity, from the hardships of the passage occasioned by famine and disease; in consequence of which, such numbers of these deluded people (who had been seduced to leave their native country by false representations) had become a burden upon the poor's rates in America, that it had at last called for the interposition of the Legislature of the several States; and it is a curious fact, that while thousands of people had left this country, in consequence of the encouragement they were told would be given to them in America, the Americans themselves considered these emigrants as a nuisance, and laws had been very lately passed in several of these States, by which no master of a ship can land emigrants in America, unless he finds security, to be given by an *American* citizen, to the amount of a hundred dollars for each passenger, that none of them shall become a burden upon the poor's funds of the United States. This, his Lordship stated had been communicated to the committee in London by a most respectable American gentleman, who happened to be there while the committee were employed in the consideration of this subject. His Lordship also stated, on the authority of the same gentleman (who has more waste land to cultivate than any other individual in America) that he had uniformly found, in the course of long experience, that emigrants from Ireland and the Highlands of Scotland were by no means equal to the native Americans, either in the skill, activity, or perseverance necessary for clearing and cultivating the woods and wastes of that country. His Lordship further stated, as an instance of the dreadful hardships to which these poor people were often exposed on their passage to America, one fact, among many others, which had been proved to the satisfaction of the committee. The gentleman above alluded to happened to

be at New-York a year or two ago, when a ship arrived with a cargo of emigrants. She had left Ireland with nearly 700 souls on board; when she arrived at New-York only 270, or thereabouts, were left alive, and those were in such a miserable condition, that 30 or 40 dead bodies lay in a state of putrefaction about the ship, for want of strength in the survivors to throw them overboard; and the vessel was altogether in such a state, that she was put under quarantine, as if she had had the plague on board of her, a precaution which experience proved to be highly necessary, for several of the custom-house officers, municipal magistrates, and medical gentlemen who had inspected the ship upon her arrival, died in a few days of the infectious disorder which they had caught on board.

“His Lordship said, that it was with such, and *many* more such facts as these before them, that the committee of the House of Commons, upon the state of the Highlands, had entrusted him to take the charge of drawing up the act of Parliament which had now passed, for preventing such dreadful calamities in future, and which appeared, for the same reasons, to be so necessary likewise in Ireland, that when it was introduced into the House of Commons, the gentlemen of that country begged that it might be extended to that part of the united kingdom, and lent every assistance in carrying it through the house. His Lordship concluded, with begging pardon for having troubled the Society, but that he thought it of importance that the gentlemen of the Highlands should be apprised of these facts before they returned to the country, where, he had no doubt, they would cordially assist in seeing the provisions of the act carried into execution, which he sincerely hoped and believed would prevent the miserable sufferings to which emigrants have been hitherto exposed.”

Meteorological Observations made at Michilimackinac, in the Territory of Michigan.

During the years 1801, 1802, 1803, and 1804, a series of regular remarks on the heat, currents, and visible alterations in the atmosphere, were made by Captain Richard Whiley, of the army of the United States, during the time that he was stationed at the garrison maintained by our government on the Island of Michilimackinac. From a copy of this meteorological journal which that active and

intelligent officer addressed to Dr. Mitchill in June 1805, the following facts have been derived:

Months.	1801.		1802.		1803.		1804.	
	highest heat.	lowest heat.	highest heat.	lowest heat.	highest heat.	lowest heat.	highest heat.	lowest heat.
October	70	36	71	28	74	30		
November	55	15	60	28	62	16		
December	45	13	36	*12	44	9		
January			49	*19	36	*14	34	*8
February			38	*6	36	*24	42	*6
March			53	*3	44	*18	50	*4
April			68	22	59	20	52	21
May			78	32	75	16	66	32
June			72	44	88	40	reckoned only to the 9th.	
July			80	42	86	55		
August			83	61	90	55		
September			76	36	80	30		

This mark * signifies the degrees below zero.

The coldest weather is accompanied with winds from the north, north-east, north-west, and west; but the north winds generally bring the most intense colds. A wind from the south-west generally caused a rise in the mercury, even in the dead of winter, and in some instances this is very remarkable, as happened on the 4th and 5th of February, 1803, when the quicksilver, after having been brought on the former of these days by a north wind to 24 deg. below 0, rose, on a change to the south-west to 18 deg. above, making a difference of forty-two degrees. A south-east wind also frequently causes a considerable elevation of the mercury. The like commonly is observed when a south wind prevails. So that south-east, south, and more especially south-west winds, are the chief currents of air which carry heat to that northern station in the territory of Michigan. This information derived from Captain Whitley's diary of the weather, is a very valuable addition to the meteorology of North-America, and will materially aid the researches of naturalists into the history of the climate and atmosphere of this important section of the globe. Our readers will recollect Major Swan's information about this region, as given in our Hex. i. vol. i. p. 526.

Smyth's Map of Upper Canada.

American geography has received another addition from the map of Upper Canada, compiled by David William Smyth, Esq. the Surveyor-General of that Province. This performance was executed at the request of Major-General John G. Simcoe, the first Lieutenant-Governor, and published at London by Faden in 1800. Its size is thirty-four inches by twenty-two: it includes the country as far as known between 41 and 48 deg. N. and between 71 and 85 deg. W. and its price is half a guinea. It is handsomely engraved, and embraces all the new settlements, townships, and discoveries in Canada, with the countries adjacent, especially the State of New-York, from Quebec to lake Huron. This instructive map is accompanied with a topographical description. On this sheet the Ottawa river, from its sources in the wilderness north of lake Huron to its junction with the St. Lawrence at Montreal, is delineated; as is also the water-course by rivers and lakes between the bay of Quintè on lake Ontario, and Gloucester-bay in lake Huron, along Trent, Talbot, and Severn rivers, and through Rice, Shallow, and Simcoe lakes; and the Thames, which, running from N. E. to S. W. empties into lake St. Clair. The situation and names of the numerous towns lying on the north-west, north, and west side of the St. Lawrence, Ontario, and Erie, are particularly marked, from their commencement below, near the lake St. Francis, up to the neighbourhood of Detroit and lake St. Clair. These extensive British settlements are contiguous to New-York, or are only separated by the intervening waters, the whole extent from the 45th degree of latitude to lake Erie. The remaining part of the distance they border on the States of Pennsylvania and Ohio, and the territory of Michigan. The reservation of the six nations of Indians is on the river Ouse, which runs from the N. W. into lake Erie. The townships are comprehended in three districts, called the *Home*, *Midland*, and *Eastern* districts; and these are divided into counties. In no part do the settlements extend very far from the lakes; but their number and population rendered it necessary for Congress to establish collection districts, to gather the duties, and prevent smuggling on this whole northern frontier. Much information of the progress of the British settlements, and their contiguity to the dominions of the United States, is contained in this map of Upper Canada. To the northward of these settlements and of lake Huron, and all

around lake Nippissing, lie the vast tracts of wilderness forming the hunting country of the Chippèwas.

Vanderlyn's Prints of the Falls of Niagara.

Two fine large prints of this cataract in the river which separates the State of New-York from the Province of Upper Canada, have been published in London. They are executed from original drawings of them done by Mr. Vanderlyn, a native of Kingston, in Ulster county, and one of the most excellent artists which his country has produced. The promising genius of this young painter manifested itself in several fine productions of his pencil, and besides gaining him a good share of celebrity, procured him the active friendship of Aaron Burr, Esq. Mr. Vanderlyn was afterwards encouraged to visit the schools of Europe under the auspices of the Academy of the Fine Arts, established in the city of New-York: and in remembrance of this he has inscribed to that body this pair of engravings. One of them is executed by Merigot, and the other by Lewis.

The first represents a distant prospect of the river Niagara, as it falls over the precipice on both sides of the intermediate island, from a point considerably below, called "the Indian Ladder." It is a sublime view, embracing the picturesque scenery of the adjacent shores. The second presents to the eye the appearance of the western division of the river, or that branch which descends on the Canada side of the island. This is depicted, as it is beheld from "the Table Rock," and is a superb piece. It looks up the river over the rapids. Mr. V. has sketched the double rainbow which the rays of the sun form in the spray driven up by the dashing water. The size of the prints is thirty inches by twenty-three; and when properly framed and glazed, they display, in an impressive manner, the power of this able artist to copy one of the grandest natural scenes which this world contains.

Another Attempt to improve Fire-places.

The names of Franklin, Rumford and Peale, are distinguished among the *economists* who have laboured to diffuse heat through apartments to save fuel, and to remove smoke. Another candidate for the favourable notice of his fellow-citizens is Mr. H. G. Spafford, of Chatham, in Columbia county (New-York). He has obtained a patent for an invention of a close fire-place, which, in his opinion, possesses

superior claims to a preference. He makes this either wholly of cast-iron, or of common materials, with jambs of cast-iron. A plate of sheet-iron plays up and down the jambs in grooves. The jambs project a little in front of the mantel, and the mantel is an high arch. Mr. S. thinks the mantels ought to be built much higher than they usually are in America. He can construct his invention so as to be either an open fire or a stove.

Houses built in Pise, or constructed of loose or common Earth, by ramming.



Mr. S. W. Johnson, of New-Brunswick, (New-Jersey), erected last fall, a building (intended to be represented by the plate), twenty-seven feet long, nineteen feet wide, and fifteen feet high, upon the front and rear walls, carrying chamber and loft floors, capable of bearing great weight and a tile roof. The walls, except the foundation, are entirely of the commonest soil taken from the road side, and cost not more than from four to six cents per superficial square foot. They are laid in solid blocks, some eleven and an half feet long, three feet high, and eighteen inches thick; others of seven and an half feet long, same height and thickness; the joints are broke, and the blocks are laid as headers would be at the corners if of hewn stone, and the whole rough cast with lime and sand. Here are neither sills, studs, braces, posts, weather-boards, nails, straw, hay, or paint required; simple manual labour and common soil being all that is necessary. It of course, will be fire-proof and cheap.

This gentleman proposes to publish a full description of this mode of building, with the apparatus necessary; also, of the English way of mud-walling, together with the estimate and proportionate parts of buildings, including Dr. Franklin's and Count Rumford's improvement in chimnies, and on the arrangement of farm-houses, out-offices, and yards in general; and a treatise on turnpike roading, with scales of elevation and depression for concave as well as convex roads, illustrated by plates.

A work was published in Paris in 1791, giving an account of a mode of building strong and durable walls with no other materials than earth. This method had been practised for ages in the province of Lyons, though little known in the rest of France, or any other part of Europe; but by a passage in Pliny's *Natural History*, Book xxxiv. chap. 14. it appears to have been well known in his time. Mr. Giffon, who published in 1772, thinks it was practised by the Romans, and by them introduced into France; and the Abbe Rosier says he has discovered traces of it in Catalonia. Buildings, something similar, are used in the East-Indies and Barbary. The board of agriculture and internal improvement, established under the sanction of the British government, in August 1793, made several inquiries amongst the emigrant priests and nobles upon the subject, and in 1797 gave out the sum of their information in a large 4to volume; but which Mr. Johnson states as not being practically correct; however, (perhaps by that kind of knowledge which actual experiment alone can produce) several commodious buildings have been erected in England, particularly at the Duke of Bedford's, and of several stories, but from the dates given, no calculation can be made of their durability. We find recorded in the agricultural communications, a copy of a letter from the Rev. Mon. Jacour, stating, that at the town of Mont Crison, capital of the Forêts, the church was built in this stile. It was eighty feet long, forty feet broad, and one hundred feet high; walls only eighteen inches thick; had then stood eighty years; and the French author says he has had buildings pulled down, which the records fully prove to have stood one hundred and sixty years.

In the United States, where labour is universally high, and in many places where there are no brick earths, nor quarries of stone, and where wood, both for fuel and timber is becoming scarce and dear, it would seem that the construction of walls from earth, in the way that Mr. J. recom-

mends, would be adopted by a great number of persons from the joint motives of convenience and economy.

*Use of Alkaline Earth to prevent Fever, and cure Dysentery. Reasons why Lime and the Leaves of certain Plants are chewed and swallowed by Natives of hot Climates, in Africa, Asia, and America.**

Some instructive observations on the effects of an hot climate upon the human constitution, and on the method practised by the Asiatics to guard against them, have been given to the public by M. F. Peron, a French naturalist, who has been employed on an expedition of discovery to New-Holland. He describes the isle of Timor, in the midst of the equatorial regions, as always possessing an highly-heated atmosphere. This heat, which is most commonly accompanied by moisture, has an operation as sudden as fatal upon the Europeans newly arrived there. Excessive and continual sweats exhaust them. The smallest motion renders them profuse, and the most perfect rest does not entirely remove them. The skin, doubly enervated by this humid heat and extraordinary exertion, seems to draw to itself all the fluids of the body; or seems at least to afford them an outlet. Hence it happens that all the other excretions rapidly diminish; the urine becomes from day to day more scanty, and there is scarcely any moisture in the nostrils. The salivary organs partake of this general exhalation, and the dryness of the mouth is communicated to the whole digestive system. The stomach loses its tone; solid food offends it, and it craves nothing but fruits, legumes, and acidulous drinks.

An universal debility, originating in the destruction of the concoctive powers, forbids the employment of the strict antiphlogistic regimen. The practisers are limited to the use of emollient fomentations, to small composing injections, to warm bathing, refreshing drinks, and the like. Little reliance can however be placed upon these; for the prostration of strength grows more alarming, and in a few days a most tormenting dysentery is combined with a con-

* For further views of this subject we refer to our work, Hex. i. vol. ii. p. 36 and 137, 3d edit. and other parts of the same volume; vol. iii. p. 1, 14, 161, 202, 302, and 404; vol. iv. p. 149, 257, and 297; vol. v. p. 150, 193, 243, 267, 413, 455, and 472; vol. vi. p. 420, 330. Hex. ii. vol. ii. p. 72 and 441.

tinued fever, mostly of a putrid or malignant nature; or even bilious and putrid at once.

In this difficult situation, the physician has to struggle with the dysentery and the fever, both pressing upon his hapless patient at the same time; and in opposition to all the efforts of his skill, they, in the greater part of cases, drag their victim to the grave. And this picture of the distemper of Timor applies to Batavia, the Moluccas, the Philippines, India, Madagascar, and generally to the hot climates of Asia. Physicians have lamented in vain the failure of their remedies to check the progress of this cruel disease.

But, although the regular practice of the Europeans has failed to find a remedy, the sagacity of the natives themselves has been more fortunate. What the tepid bath, strong tea, ambergrise, cardamoms, and other aromatic seeds, cloves, ginger, and other warm and stimulant spices have been unable to accomplish, has, as M. Peron observes, been happily effected by a composition of four ingredients, called, from the name of one of them, *Betel*. This when chewed and swallowed restores to the mouth, stomach, intestines, and to the great glands connected with them, a due degree of vigour and secretory power. And thus a portion of the fluids which otherwise would be exhaled from the skin, is turned inwards to the alimentary canal.

Betel is usually composed of the areck-nut (areca catechu) two parts, of quicklime one part, of the burning leaf of a species of pepper (piper betel), and of the leaves of tobacco one part. These are well mixed together, to form a masticatory or quid for the mouth: and the experience of its utility is so well established, that the natives have introduced it into general use in all hot climates from the Moluccas to the Yellow River, and from the Ganges and Indus to the shores of the Black Sea. It is however not equally prevalent in all these countries; for at Constantinople, for example, betel is more an article of luxury among the rich than a national custom.*

* Charles Buxton, M. D. made a voyage from New-York to India and China in the year 1790. In his manuscript journal, which he politely permitted Dr. Mitchill to peruse, he mentions the general use of betel or areca among the Malays, to whose lips it gives a disagreeable appearance, as if their gums were bleeding. The inquiries of this gentleman at Batavia confirm the relation of M. Peron, for he found this fashionable masti-

Sometimes the fruit of the young betel plant is employed instead of the leaves. The lime is prepared from the calcination of madrepores. They who use the composition invariably suffer a loss of their teeth, the parts of those organs which project beyond the gums being eaten away or decomposed. But this destruction of the teeth is not attended with any pain or inability to use them as long as they last.

This composition acts, in the opinion of M. Peron, somewhat after the same manner that bitters, wines, spices, high seasoning, and pepper-pots do; except that its operation is by far more powerful and permanent, and better adapted to answer the purpose of regulating the stomach and bowels.

The lime is an essential ingredient of this preparation. The inhabitants of the Admiralty Islands were observed by Mr. Labillardiere to carry with them calabashes and bamboos of a very finely powdered quicklime. One of those persons had a spoon in the form of a spatula, which he filled with the lime, and made many signs and gestures to show his visitors how excellent it was.

Messrs. Humboldt and Bonpland relate, that in Quito and Popayan, the use of it is almost as general as in India and the Moluccas. Quicklime is sold in the public markets for chewing, as an article of the first necessity; and it is prepared from the burning of calcareous madrepores. The natives of the South Sea Islands use with it the leaves of the *Piper Siriboa*; of South America, those of the *Erythroxylum Peruvianum*.

Bontius, in his account of the diseases of the East-Indies, makes some critical remarks on the writings of Garcias ab Orta. He says that the betel-chewers spit out the first juice; and that this composition, *with the lime*, is greatly preferable to tobacco. He speaks of it as aliment.

The pains taken by all these rude people (who know no-

catory to be formed of tobacco, betel-leaf, areca-nut, and CHINAM, or Lime. He says the areca is called betel by the natives, and thought by some to be the production whence the reddish inspissated astringent juice, called *Catechu*, or *Terra-Japonica*, is extracted. The white paste with which they besmear the betel and areca, is said to be made from sea-shells. That which he saw for sale in the streets was prepared in little cups, and kept ready for daubing on the other ingredients. It tasted exactly like chalk rendered acrid or caustic by fire. These areca-nuts are great articles of trade, and on one of them, which the author of the journal we are now quoting gave to Dr. M. various experiments were made of tasting, chewing, and extracting its red colour by aid of lime.

thing of the principles of modern science), to prepare and preserve their lime, is remarkable. There are small calabashes growing in the equatorial regions of Asia, about the size of a snuff-box; they remove the contents of these very carefully through a very small opening; through this exceedingly small hole they most patiently introduce their quicklime. After they have put it there, they very carefully keep it stopped, lest it should lose its activity. When they want some lime, they shake and strike the calabash many times to make it pass out through the narrow aperture. And while they bestow such extraordinary attention upon their alkali, they keep the other ingredients, the betel, areck and tobacco, as they keep their other things, without any such extraordinary care. Father Papen declares, that some persons have been known to take lime to the size of a hen's egg in a day.

Thus, in the composition of betel, there is a dose of alkali in the lime, of hot aroma in the pepper-leaves, of a powerful astringent in the areck-nut, and of narcotic in the tobacco. To the use of this composition, to the operation of the cool bath, and to friction with palm oil, the natives have been led by experience; and foreigners who visit their regions ought, as they value their safety, to conform to the custom, and do the like. Is it not a pity that the use of it has not been introduced into the West-Indies?

Destruction of Venereal Poison by Alkaline Salts among the Africans.

In our Hex. i. vol. ii. p. 203. 3d edit. we first announced the easy and efficacious treatment of primary syphilitic ulcers by the *lixivium tartari*, or deliquiated carbonate of pot-ash. Afterwards, in *Medical Repository*, vol. ii. p. 216, of the same series, we gave an ample account of the efficacy of the same remedy, and of other alkaline applications in recent venereal taints. And again, in *Med. Rep.* vol. iv. p. 152, the power of alkaline salts to overcome morbid poison was further verified. All these experiments are corroborated by a fact told by Mr. FREDERICK HORNEMANN, the man sent by the English African Society to travel and explore the Lybian deserts in 1798. After journeying from Cairo, in Egypt, to Maurzouk, the capital of the kingdom of Fezzan, Mr. H. employs the third chapter of his book in detailing various particulars of this inland country and its inhabitants. Among other valuable information, he gives

some concerning the use of natron or soda by the natives, to cure venereal ulcers. After describing the dissolute manners of the women, he observes how prevalent that foul malady is among the people. That which is brought from Tripoli and Cairo is called "franzí," or the *frank* evil; that is, the distemper derived from the Franks or French; or, as we say in English, the *French-pox*, or *Morbus Gallicus*. They pretend there is a worse form of it caught in the Soudan, a region lying to the north. But for the cure of both sorts, they purge the intestines with salts and colocynth, and wash the sores with NATRON-WATER, OR DISSOLVED SODA. And these remedies seldom fail to complete a cure, unless the disease has taken deep root. Such was his original declaration to his employers in 1798, and he confirms it by a subsequent communication in 1800. (Travels, p. 73 and 102.)

Substitution of Pot-ash for Sea-Salt, or Muriate of Soda.

In Hornemann's Travels, p. 118, it is related, that the inhabitants of Fiddri, Fittre, or Hauga, an interior country of Africa, have no salt in their country but what they prepare from the ashes of straw. The employment of pot-ash by these people, in lieu of sea-salt, corresponds with the custom of the North-American savages, related in our Hex. i. vol. vi. p. 330, and of the East-Indians, described in Hex. ii. vol. ii. p. 72; among whom the vegetable alkali has been, time out of mind, most usefully substituted for common salt; experience having sufficiently proved its antiseptic, antacid, wholesome, and concoctive operation. Pot-ash thus serves, not only as a corrector of putrefaction to animal food, but as a condiment to the palate and stomach of the person who eats it.

Pot-ash acting as a Condiment and Antiseptic in the Preparation called JERKED MEAT.

From experience, wholly unconnected with any speculation or hypothesis, mankind derive the most useful additions to knowledge. And the practices of people who had no acquaintance with the principles of science, often furnish facts of the utmost importance. Besides the authorities contained in the preceding paragraph, another remains to be mentioned. This is the use of wood-ashes in preserving the flesh of animals from putrefaction, and rendering it more palatable and wholesome. In many parts of North-

America, it was, and indeed is, the practice of the savages to lay up for winter, a quantity of dried or jerked meat. This is obtained from the bodies of the animals killed in hunting, by cutting the flesh from the bones in thin slices, and drying them over a slow fire. In this operation they make no use of sea-salt, generally because they cannot get it. But they do not suffer this precious article of their subsistence to be packed away without something to keep it from spoiling. It is their established usage to sprinkle the pieces of this fresh meat, as its juices exhaled, with clean wood-ashes. Their experience taught that *pot-ash* and *cinis*, the two alkaline ingredients of this product of the fire, would keep it from taint and corruption, and, at the same time, render it more agreeable to the palate, and more easy to the stomach. On the use of pot-ash to preserve gammons, see Hex. i. vol. v. p. 473.

Dr. Mitchill's Note to Dr. Valentin, of Marseilles, on the Knowledge which Hippocrates seems to have had of the Yellow Fever.

Looking the other day into the writings of Hippocrates, I was very much pleased with the collection of letters which are ascribed to him and his correspondents. My attention was more especially drawn to the parts which related to the pestilential distempers of Persia and Greece. The facts are worthy of being translated and told in a modern tongue. A destructive pestilence had raged for some time in the army of Artaxerxes, king of Persia. As it continued to extend its circle of action, in spite of every thing that had been done to limit its progress, Artaxerxes wrote a letter, in most earnest terms, to Pætus, begging him to advise some remedy, or procure a skilful physician without delay. In reply to the king, Pætus named to him Hippocrates, as capable of arresting the malady; praised him in the most exalted terms, and recommended that he should be prevailed upon to go to the king's camp, by the most liberal rewards. On this, Artaxerxes wrote to Hystanes, his præfect near the Hellespont, directing him to offer Hippocrates unlimited wealth, and the honours of nobility, if he would come immediately to the Persian camp. Hystanes wrote to Hippocrates the wishes and offers of his master; but the old man, with great sagacity, avoided a disagreeable and troublesome undertaking, by authorizing Hystanes to tell the king his master, that as to food, clothing, house, and property enough to live upon, he enjoyed them all already; that it was not law-

ful for him to accept Persian gold ; nor to deliver from these diseases the Barbarians who were enemies of the Greeks. Hippocrates also wrote to Demetrius, saying that the king of the Persians sent for him, not knowing that he valued wisdom much higher than money. Artaxerxes was so affronted with the reply of Hippocrates, communicated to him by Hystanes, that he immediately wrote to the people of Cos, the island on which Hippocrates dwelt, commanding them to deliver to his messengers that perverse physician, under the penalty of having their city destroyed and their island laid waste, so that the waves of the sea should roll over both, and hide from posterity that their city or island ever had an existence. The Coans, his countrymen, answered with true spirit, that they unanimously refused to give him up, let the consequence be what it might, even the most cruel destruction of their lives. They no more regarded Artaxerxes than they had done Darius and Xerxes before him. The Coans had done the king no injury ; they would not deliver him their fellow citizen ; and so bade the messengers go their ways. Afterwards the Athenians expressed a grateful sense of the success of Hippocrates and his disciples, in preventing such ravages of this plague in Greece as had happened in Persia. They thanked him for the writings on medicine which he had published ; they applauded him for despising the offers of Artaxerxes, the barbarian. They also decreed that he should be initiated into the greater mysteries ; that he should be honoured with a weighty crown of gold ; that the children of all the inhabitants of Cos should have the freedom of Athens, out of respect to the great man their island had produced ; and that Hippocrates himself might live and be supported in the Prytanæum for the remainder of his life.

It is much to be lamented, that the Grecian sage had not written an account of this distemper, and of the methods he took to guard against it. We might, in all probability, have derived some information that would apply to the present state of society among us. However, although he has not left us the history of this disease which afflicted the Persian army, and which gave so much concern to the Greeks, there are several passages in his works which show, that the southern parts of Europe and Asia were visited with disorders marked by *yellow skin* and *black vomiting* at least four hundred years before the Christian era.

Jaundice, yellowness of the skin, *ικτερος*, or the morbus regius, is frequently mentioned by Hippocrates. And he evidently comprehends under the title of Icterus, all the yellow hues of the skin, though he allows that jaundice may be *black* and *white* as well as *yellow*. Icteros was originally the name of a bird. In modern ornithology, the different species of icteric birds are comprehended under the genus of *Oriolus*. Of these the *Oriolus galbula*, *golden thrush*, or *wit-wall*; the *O. icterus*, *icteric oriole*, or *banana-bird*; the *O. novæ Hispaniæ*, or *Mexican icterus*; the *O. annulatus*, or *ring-tailed icterus*; the *O. Brasiliensis*, or *small yellow-bird*; are some of the principal sorts. Being all remarkable for their different shades of *yellow* (*fulvus*, *flavus*, *luteus*, &c.) they have afforded a name to a disease in which yellowness is a conspicuous symptom. And this, among the ancients, had no connection with the liver or bile; and the term is applied by Hippocrates and the other Greek physicians, to signify "all kinds of cutaneous yellowness, either with or without fever." For an old and respectable authority on this subject, I refer you to the writings of the African physician, Cælius Aurelianus, who is supposed to have lived and written before Galen, A. C. 130; and who, in the fifth chapter of the third book of his work *De Morbis Acutis et Chronicis*, has stated the acute and chronic form of the disease, called by the Greeks *ικτερος*, and by the Latins *aurigo*; the jaundice of the English. The name of this disease has also been derived from *ικτις*, a weasel, and *ικτις*, a kite, on account of the yellowness of the eyes of those animals.

The morbus regius, or Icterus of the first section of his Coan Prognostics, is undoubtedly febrile yellowness, and not idiopathic jaundice. The epithet *οξύς*, *acute*, is repeatedly applied by Hippocrates to denote a febrile jaundice, which soon destroys life, in contradistinction to the other kinds, which are of a more chronic type, and less fatal. The like interpretation is to be put upon the sixty-third aphorism of the fourth book, which declares a yellowness (*ικτερος*) supervening in fevers, on the seventh, ninth, or fourteenth day, to be a good symptom, provided there is no hardness in the region of the liver. In the sixty-second aphorism, he clearly means to be understood in the same manner, when he says, that yellowness (*ικτερος* again) appearing in fevers *before* the seventh day is an unfavourable symptom. A similar meaning must be intended in the ninth section of his book

on Crises, where it is laid down as a maxim, that "in burning fevers, a yellowness (*ικτερος*) breaking out on the fifth day, and accompanied by hiccough, is a fatal sign." (*Εν τοις καυστοῖσι ταν επιγενητοῖσι ικτερος και λυξη πεμπταῖω εοντι, θανατῶδες ὑπόσφοται λαμβανονται.*) Let this sentence be particularly considered. In the whole catalogue of diseases there is none but that commonly called yellow fever to which this aphorism can properly be applied. And it would be exceedingly difficult, in so few words, to give a more expressive delineation of the disease in question. In the third section of the same book, he declares that yellowness appearing in ardent fevers on or after the seventh day, denotes a critical sweating. In contradistinction to all which is the case mentioned in the forty-second aphorism of the sixth book, in which it is stated, that an indurated liver following a yellowness, is an unfavourable occurrence; because it is a case of idiopathic jaundice, connected with a very morbid condition of that important bowel. Yellowness, as a symptom of fever, is mentioned in various other places. I shall mention but one more, and that bears so direct an application to the subject, that it is impossible to mistake its meaning. It is from his book *De Ratione Victus in Morbis Acutis*: *In a bilious fever, yellowness coming on with shivering before the seventh day, terminates the fever; but if it come on abruptly (or unseasonably), without shivering, it is mortal.* (*Εν πυρεῳ χολωδεῖ, προ της εβδομης, ρεῖα ριγεος ικτερος επιγενόμενος, λυει τον πυρεῖον; ανευ δὲ ριγεος ην επιγενηται, εξω των καιρων, ὀλεθριον.*)

It will not appear strange that Hippocrates should have been acquainted with the disease called yellow fever, if we attend to the following account of the Phasians, delivered in his book on *Air, Water, and Situation*.

Hear what he says of the Phasians: "As to the inhabitants of *Phasis*, their country is *marshy, hot, watery, woody*, and subject to many violent *showers* at all seasons. They also live in the marshes, in houses or huts built in the water of wood and reeds; seldom walk to the city or the market, but pass from place to place, as they have many canals and ditches, in boats cut out of one piece of timber. The waters they drink are hot and stagnant, corrupted by the sun, and supplied by the rain. The river *Phasis* itself is the most stagnant of all rivers, and the stream the gentlest. The fruits they have there never come to perfection, but are cramped in their growth, and, as it were, effeminated by the vast quantity of water. The air of the country is also thick and misty from so much water. For these reasons

the *Phasians* differ in their appearance from other people ; for they are large and thick to a prodigy, without any sign of joint or vessel. Their colour is a pale yellow, like that in a *jaundice*." (Την τε χροὴν ὡχρὴν ἔχουσιν, ὡς περ ὑπο ἰκτεροῦ ἔχομενοι.)

You will at once perceive that the writings of Hippocrates contain evidences enough of morbid yellowness ; and that, although the different kinds are signified by the same word, the yellow suffusion incidental to fevers is clearly distinguishable from the yellow tincture caused by an absorption of bile when the liver is obstructed. In short, it will appear perfectly plain, that the ancient Greeks, when sick of violent fevers, were liable to yellowness of the skin, even as the *Fredes* are now.

Having found these facts in the works of the father of physic, I turned over his pages with a view of finding whether he knew any thing of black vomiting. I soon found the phrases *μελαιναὶ χολαί*, black bile, *μελανὰ ἐμέον*, black vomit, and *μελανῶν ἐμέον*, the vomiting of black matter. In the twelfth section of his prognostics, he affirms, that if the matter vomited be of a livid or black colour, it betokens ill. So in the first section of the first book of his *Coan Prognostics*, he enumerates *black vomiting* among a number of the most desperate symptoms. And also in the fourth section of the same book, he considers leek-green, livid, and black vomiting, as omens of sad import. (Εἰ δὲ εἴη τὸ ἐμευμένον πρασινοῖδες, ἢ πηλίου, ἢ μελάν, οὐκ ἂν ἡ τοῦτων τῶν χρωμάτων, νομίζεν χρηὴ πονηρὸν εἶναι.) The passage in the eleventh paragraph of the first book of his *Predictions* indicates strongly the unfavourable issue of a fever after black vomiting. The connection between black vomiting and death is noticed likewise in the third paragraph of the second section of his *Coan Prognostics*. The same symptom is mentioned in the first paragraph of the first section of the same book. And you will find the like to recur in the fourth paragraph of the third section of the same book. But I shall forbear to make any further references, under a persuasion that this alarming symptom was frequent among the ancient Greeks labouring under fevers, was well known to their physicians, and was noticed by Hippocrates as a familiar occurrence.

I have confined myself in citing the works of Hippocrates to some of the passages which contain pointed facts and opinions relative to a yellowness of the skin, and a vomiting of dark or black matter in fevers. My object is, to show that these are by no means new symptoms ; that they existed in

the days of Artaxerxes, certainly among the Greeks, and probably among the Persians; that they had been observed more than two thousand years ago by one of the most careful of men in the southern parts of Europe; and, of course, since they existed so long before the voyage of Columbus, there is no need of resorting to the stale and delusive notion that the fevers with these symptoms are of modern existence, and imported solely from America. Unfortunately fevers with these accompaniments were long, long before, found to prostrate the strength and shorten the life of man. And the sickness of the year 1804, and of the present, in Spain and Italy, are but revivals or renewals of those distempers which have from a remote antiquity visited from time to time the northern shores of the Mediterranean Sea.

This subject may be further illustrated by recollecting, that Hippocrates practised physic, for a considerable portion of his life, in parts of Greece, situated nearly in the same parallel of latitude with those in North-America where the yellow fever has exhibited its greatest ravages.

I shall only add, for the sake of facilitating the inquiries of yourself and other learned gentlemen who may wish to examine the original and the expositions which have been made of it, that I have consulted, on the present occasion, the Greek text and Latin version of the Hippocratic writings by Fœsius in folio, and the folio Latin translation by Cornaro, with the Commentaries of Marinelli and the Index of Pinus.

Efficacy of the volatile Alkali, against the Bites of venomous Serpents.

The following account was published in Madrass, December 10, 1800, by James Anderson, Physician-general at Fort St. George, as a communication from Mr. Ingledew, of the Mysore country.

“A Cooly gardener, at the Lal Bagh, in opening the mouth of a covered channel, was bit by a snake about seven o'clock in the morning of the 21st ult. Upwards of one hour afterwards, I, by chance, heard of the accident, made inquiry after the man, and found that he had received two wounds, one on each side of the first joint of the fourth finger on the right hand; he complained of great pain in the wounded parts; of giddiness in the head, and an affection of the sight; the two last, however, were in no considerable degree. A cord had, at the beginning, been firmly tied round

the arm, which had produced some swelling upon the parts below; the wounds were immediately extirpated, and the hand put into warm water to encourage the bleeding. Eau de luce was given at short intervals, in such doses, as the stomach could conveniently bear, until a small bottle, containing about three drachms, was finished; by this time the caustic volatile alkali had been procured, of which a few doses were given at longer intervals, until sickness of stomach was produced. As the man had no particular affection; as four hours had now elapsed since the time of the accident; and as volatile medicines had been administered very liberally, he was thought to be tolerably secure from danger: I therefore left him with directions to be immediately informed should any change take place. I again saw him at twelve, and repeated the caustic volatile alkali; the ligature, which had been until now bound alternately round the joint and affected finger, by way of alleviating the uneasiness it caused, was, on account of pain and swelling, obliged to be removed; the wound had bled very freely, and a hot emollient poultice had been applied to the finger and back of the hand. The patient still continued easy, and I heard nothing more of him, until half past three o'clock, when I was told, for the last half hour he had been getting considerably worse. On my arrival he was to all appearance dying. The extremities were perfectly cold; the pulse imperceptible; the powers of speech and deglutition were lost, and the body was violently convulsed. I again had recourse to the caustic volatile alkali, which, at first, could not pass into the stomach in consequence of convulsions of the muscles of the throat, and the greater part of the first few doses was rejected; it was, however, persisted in until about two hundred drops had been taken: the severity of the symptoms began then to abate; the pulse became pretty good; a little warmth was observable in the limbs; and a violent perspiration came upon the body. He afterwards took several doses more, and by eight o'clock was so well that he wished for something to eat. He is now recovered, and able to do his duty in the garden.

"The channel was opened, and the snake killed directly after the accident, which proved to be a covra capelle, measuring nearly six feet.

"As nothing but the caustic volatile alkali, or a preparation of it had been used, and as this man appeared to labour under every violent affection that could ensue from the bite of a

covra capelle, or that an individual could suffer, I think it may be considered (if any thing we yet know of can) as a secure remedy against the effect of the bite of that species of snake. This, however, can only be confirmed by future practice; extirpation of the parts, as you have recommended, is probably always advisable, and at any period before symptoms of sickness became obvious, as it is difficult to say when absorption of the poison may take place, or when it may begin to operate so as to be productive of danger. As the wounds in this case were closely upon the joint, extirpation of the parts to any depth was impracticable, and, for this reason probably failed. Ligatures round the limb would appear to have been of advantage here, as no severe symptoms were caused until three hours after their removal; but to render them useful, it will be necessary that they should be bound as tight as to put a stop to the circulation of the parts beneath, which is inadmissible beyond a certain period, and that is so short, that all the aid we can expect from their application is to admit of time sufficient for administering such remedies as are known to be most effectual in removing the hurtful effects of the poison altogether."

A few Passages in the Writings of Hippocrates, where Carbonate of Soda (the Natron or Nitre of the Ancients) is prescribed, mentioned, or recommended.

In his treatise on *Diseases*, lib. ii. sect. 2. soda is recommended as an ingredient in fomentations, gargles and liniments for quinsies, and as a wash for the palate after supuration.

In his tract on *Internal Affections*, soda is ordered as one of the materials for a clyster in anasarca; sect. 2. cap. 29.

In his essay on *Superfætation*, soda enters into five or more different prescriptions for diseased states of the womb.

His memoir on the *Female Constitution* (*De Natur Muliebri*), sect. 2. contains three several receipts for diseases of the uterus, wherein soda, or the red nitre of Egypt, enters: in sect. 3. he recommends it as a detergent for the vagina and uterus.

The book on *Female Diseases*, sect. 3. recommends soda in two forms to cleanse and stimulate the genital parts; and in sect. 4. the same alkali is mentioned nine or ten different times as good for the peculiar diseases of women. Its power in promoting conception is extolled in many parts of his writings.

In the memoir on *Fistulas* he mentions the utility of soda to cleanse the ulcer and mitigate the pain. He advises ulcers and abscesses from the gout to be treated with a watery solution of soda, put on and continued for three days. He recommends soda (to the size of a sheep-dung), mixed with honey, to be made into a clyster, in two different places. He adds soda to hyssop-tea and honey, as expectorant in pleurisy, in the form of an emulsion and watery infusion. He bears witness of the good effects of soda in ulcers in his piece *De Humidorum Usu*; in sect. 1. of his second book *de Morbis*, and in sect. 4. of the first book *de Morbis Muliebribus*.

Such in part are the testimonials which are extant in the writings of Hippocrates, on the use of soda among the ancient Greeks. For the facts related by Pliny on the virtues and uses of this powerful antiseptic and detergent salt, see *Med. Rep. Hex. i. vol. iv. p. 150*. And for the detection of the modern blunder among practisers in prescribing nitrate of pot-ash where they ought to order carbonate of soda, see *Med. Rep. Hex. i. vol. v. p. 119*.

Native Sulphates of Magnesia and Soda in Virginia.

A newly discovered chamber of one of the very large salt-petre caverns in Greenbriar county, near the Court-house, has lately been searched for salt-petrous earth; but instead of that material the proprietor has found other saline compounds of very different qualities. A parcel of the matter formed from the earth of the cave, in an attempt to make salt-petre, was forwarded by Thomas M. Randolph, Esq. in June, 1805, to Dr. Mitchill, and on examination was found to consist of a large quantity of sulphate of magnesia or Epsom salt, an inconsiderable portion of the sulphate of soda or Glauber's salt, and a slight admixture of the muriate of soda, common salt.

Lead Mine in Pennsylvania.

On Perkiomen Creek, a quantity of lead ore has been discovered. Attempts have been made to work it with considerable success. The ore lies in a vein, which is regular, and of some extent. It is said to be on the estate lately belonging to Francis Da Costa. Its course is from north-northeast and south-south-west; the fissure is nearly vertical, and its width is from twelve to fifteen inches. The nearness of the mine to water-carriage and the market, is a circumstance

highly flattering to the expectations of those who have examined it, and have an interest therein. The lead, on being subjected to the operation of the cupel, is said to contain two and one-third ounces of silver in one hundred pounds. The specimens of it which we have seen are ponderous and shining galenas.

Bearded and fair People inhabiting the Country high up the Missouri.

Since the publication in the newspapers of Mr. Toulmin's account of the Welch Indians, said to live in a remote settlement of the West, the following additional information has been given by Mr. B. Durocher to Samuel Russel, Esq. January 19, 1805. This we have translated from the French.

"The Missouri is a continuation of the handsomest part of America, or perhaps of the rest of the globe, on account of its valuable productions, quantity and abundance of its minerals, and the agreeable temperature of its climate.

"I have also read, with the greatest interest, the details which your travellers give of this fine river, which they appear to have explored about six hundred leagues towards its source, where they met, to their great astonishment, a nation of white Indians, with a blood as pure, and a complexion as fair as those of Europeans. This, in fact, appeared to them a strange phenomenon, as, indeed, it is the most extraordinary to meet with in a savage country so retired.

"I will tell you, Sir, what I had already heard spoken of the singularity of this nation by many ancient travellers from Canada, whom I particularly knew more than twenty-five years ago at Montreal, and who agree perfectly with the description which your American travellers give of them, as well as with the other discoveries which they have made in this fine country.

"The following are the accounts of these Canadian travellers, according to the best of my recollection.

"It was some years before Canada was ceded to Great-Britain by France, that the then French government sent a party of fifty or sixty Canadians to make discoveries toward the source of the river Missouri.

"These travellers ascended this great river during many months, without perceiving any sensible alteration in the width and force of its current; but the banks of the river presented them with a variety, as agreeable as interesting, in the plants and trees which they met every where of

the most agreeable appearance and astonishing height; that their admiration was still increased to find on its sides natural meadows of an immense extent, covered with animals of many species; mines of lead and copper, which appeared to them abundant and easy to work; in other places springs and mines of natural salt of a considerable extent.

“ But after having ascended the Missouri about six or seven hundred leagues from its mouth, or from its junction with the Mississippi, their progress was stopped by meeting with an Indian nation, very numerous, having long beards, and a complexion as white as that of Europeans, and their language totally different from that of other nations which they had passed, so that it was impossible to understand them; but that they perceived very quickly the great discontent which their presence in the country occasioned, so that they were not able to prevail upon any of them to accept of the least present.

“ This extraordinary circumstance determined them to leave them as soon as possible, to continue their voyage in ascending the river: but it was then that this nation arose in arms against them, making them threatening signs, and prohibiting any further ascent into their country, and obliging them to alter their course.

“ These Canadian travellers were obliged to terminate their researches in that place, and to set out on their return. They gave to this nation the name of *bearded*, from the long beards which the men wore, which is the greatest peculiarity which they have told of this singular people. And all I am able to recollect that they have reported of this fine country goes toward a perfect correspondence between the accounts given by your American travellers, and to establish a belief that this Indian nation of white descent which they mention, is in fact the same which had been discovered or met with by the Canadians, and by them called the *bearded Indians*.

“ But your American travellers, more fortunate than the Canadians, have become more particularly acquainted with this people; and this may be reckoned a very important circumstance.”

Malignant Fever.

It bears an unfavourable appearance in the prospect of the ensuing season that several alarms should have taken place, at this early period, in New-York and some of the neighbouring cities. Although public apprehension, in all

these instances, has gone greatly beyond the facts, it cannot be denied that similar occurrences, on a variety of former occasions, in this as well as in other places, have proved to be the precursors of pestilence.

The month of May, and the chief part of the month of June, produced weather which was in no respect remarkable, excepting that it might be considered as rather more cool and moist than usual. Towards the end of June the heat began to increase to an oppressive degree, and from that time till about the 20th of July continued to range very high, and to be very severely felt.

Early in the month of June, and during the mild weather which has been described, a case of malignant fever occurred in this city, in Roosevelt-street. The patient, a common labourer, was attacked with febrile symptoms, in the usual form of remittent fever, which rose so high as to excite delirium of several days continuance, to which was added a deep yellowness of the skin. He was removed from the foul air in which he had sickened to the Marine Hospital, where he slowly recovered. This person had been exposed to no medium of foreign contagion, and his case remained isolated and solitary.

But the effect of the high heat just now described soon became further discoverable in its morbid influence. A man lately arrived from England, employed as an ostler, in a livery-stable situated in an alley opening into Maiden-lane, was attacked with fever on the 9th of July, which, after proceeding insidiously for some days, disclosed at length a very malignant character. On the 5th day of the disease he became extremely yellow; on the 9th he was removed to the Marine Hospital, was attacked with black-vomit on the passage thither, and continued occasionally to eject from his stomach a dark-coloured fluid till his death, which took place on the 13th day from the accession. In the course of the illness he was several times attacked with hæmorrhage, and just before death was seized with convulsions. Two other persons belonging to the same stable, and also lately arrived from Great-Britain, were taken ill in succession, a few days from each other. They were obviously affected with a lower grade of the same disease which terminated fatally in the first case. Being sent to the Marine Hospital, where they enjoyed pure air and every requisite accommodation, they recovered. There was not the least ground to suspect that these ostlers had been exposed to foreign conta-

gion. But a gentleman who frequently called at the stable had perceived, many days before any illness took place, a very offensive stench proceeding from some putrefying matters in the yard or in the neighbourhood.

The next case which excited any great degree of public attention was that of a young man from Ireland, residing in Water-street, who was seized with fever on the 24th of July. At the first attack the symptoms were violent and alarming; they continued to proceed with severity till towards the close of the fifth day, when they suddenly became highly malignant, and he died on the sixth, with all the unequivocal appearances of what is called Yellow Fever. The malignity of this case was such as to leave no doubt of its nature on the mind of any person. An attempt was made to derive this disease from foreign contagion; but, upon an investigation of the circumstances, no colour of proof, or even of probability, could be obtained. The young man, seventeen days before the attack of his illness, had gone to a tavern near the quarantine establishment, for the purpose of receiving some letters, and visiting some friends on board of a vessel which had arrived two days before from the port of Londonderry, in Ireland. But he did not go on board of this vessel; and even if he had, no injury could have ensued, as every person on board was in perfect health. At that time also not a single case of Yellow Fever existed on board of any of the shipping under quarantine, nor in the Marine Hospital. During the illness of this patient, more than twenty persons in quality of nurses, physicians, visitors, &c. were often in his chamber, and frequently in close contact with his person; and yet no instance of the disease spreading by contagion has occurred. This is the more surprising, if contagion had existed, as the young man lay ill in a populous and crowded part of the city.

A case, similar to the foregoing, in several circumstances of malignity, was discovered in Greenwich-street, on the 5th of August. It was a black woman living in a very filthy cellar. She was removed as soon as possible to the Marine Hospital, where she died soon after her arrival. No suspicion could exist of the foreign derivation of this case.

Several other cases of fever, of an highly suspicious appearance, have also been observed in different parts of the city, some of which have terminated in death, others in recovery.

About the 8th of July, New-Haven, in Connecticut, and

Providence, in Rhode-Island, were alarmed by the appearance of some cases of malignant fever.

At New-Haven the disease unquestionably began in a family, situated half a mile from the wharves and shipping, and affected two women who had held no intercourse with vessels or seamen. Only a few persons have been attacked in that place; and the disease was not found to spread by contagion. It has been stated, that some cases of malignant fever occurred nearly at the same time at Hartford, Windsor, and some of the other interior parts of Connecticut.

The cases at Providence were also few; the deaths not exceeding six or eight: It is said the public opinion in that town is divided on the question of the origin of the disease; some ascribing it to the exhalations from the low grounds and filth of the neighbourhood where it appeared, and others to the effluvia of certain foul vessels lying at the wharves. But whether generated in vessels, or on low and filthy grounds, from the limited duration and extent of the disease, it cannot have been propagated by contagion.

In the city of Philadelphia a slight alarm took place towards the end of July. It appeared that three men, carpenters, had been attacked in the same house with a disease of suspicious malignity, on the 26th of July. They were immediately sent out of town for the sake of precaution, and all recovered.

Medical Commencement at Philadelphia.

At a medical commencement in the University of Pennsylvania, held at Philadelphia on the 5th of June, 1805, the following gentlemen were admitted to the degree of DOCTOR OF MEDICINE, having severally exhibited and defended Inaugural Dissertations on the subjects annexed to their respective names.

JOSEPH KLAPP—An Essay, disproving the Existence of an æriform Function of the Skin, &c.

THOMAS EWELL—Notes on the Stomach and Secretion.

HENRY P. DAINGERFIELD—An experimental Essay on Cutaneous Absorption.

JOHN T. REES—Remarks on the Medical Theories of Brown, Cullen, Darwin, and Rush.

RICHARD L. SAVIN—On the Effects of external Cold in the Cure of Fevers.

WILLIAM GIBBONS—On Hypochondriasis.

DANIEL LEGARE—An experimental Inquiry into the Effects of Tobacco-Fumes.

- GEORGE EVANS—On the Rheumatic State of Fever.
THOMAS SMITH—An Essay on Wounds of the Intestines.
WAKEMAN BRYARLY—An Essay on the Lupulus Communis.
JOHN COCKE—Observations on Jaundice.
ELISHA DE BUTTS—Essay on the Eye and on Vision.
FELIX ROBERTSON—Essay on Chorea Sancti Viti.
JOSEPH PARRISH—On the Influence of the Passions.
JOSEPH HARTSHORNE—On the Effects of Air upon living Animals.
JOHN DOUGLASS—Essay on Mercury.
JOHN ESTEN COOKE—Account of the Inflammatory Bilious Fever of 1804, in the County of Loudoun, Virginia.
LEWIS BURWELL—Observations on the Digitalis Purpurea.
HENRY M. GRAY—On Cynanche Trachealis.
BENJAMIN CHAMPNEYS—Dissertation on the Dysentery.
JAMES C. MADISON—Observations on the Medical Properties of Iron.
GEORGE E. MITCHELL—Essay on the Puerperal State of Fever.
ISAAC CLEAVER—Dissertation on Cataract.
WILLIAM HOWARD, jun.—Essay on the Hydropic State of Fever.

These dissertations exhibit very respectable specimens of the proficiency of the several graduates in professional studies; and many of them possess a degree of merit scarcely to be expected in an academic exercise, and which would certainly do honour to a more advanced age. The number of graduates in medicine which this seminary annually presents to our country, the astonishing conflux of students there from the most distant parts of the Union, the indefatigable exertions of the Professors to improve and disseminate the principles of medical science, together with the new and multiplied sources of instruction which are constantly opening in that eminent seat of learning, all conspire to prove the importance of the benefits which the United States are now deriving, and may hereafter still further expect to derive from the MEDICAL SCHOOL OF PHILADELPHIA.

Professorship of Surgery.

We congratulate the public on the appointment of PHILIP SYNG PHYSICK, M. D. to the professorship of Surgery in the University of Pennsylvania. The celebrity which the surgical talents of this gentleman have universally acquired, is too well known to require the aid of our suffrage.

Dr. Caldwell's Translation of Desault's Work on the Bones.

Some months ago Dr. Charles Caldwell, of Philadelphia, published a translation from the French of "*A Treatise on Fractures, Luxations, and other Affections of the Bones: By P. J. Desault, Surgeon in Chief to the Hotel-Dieu of Paris: Wherein his Opinions and Practices, in such Cases, are stated and exemplified. Edited by Xav. Bichat. With Plates.*"

The public are much indebted to Dr. Caldwell for the introduction of this excellent work to the acquaintance of such physicians and surgeons in the United States as cannot conveniently find access to the original. The name of DESAULT is illustrious in the annals of surgery. The value of the work is also enhanced by an appendix, in which Dr. Caldwell has judiciously given an account of some improvements in surgery made in this country.

New Edition of Dr. Rush's Medical Works.

We are glad to be enabled to state that a new edition of Dr. Rush's "*Medical Observations and Inquiries,*" in four volumes, with numerous additions and improvements, is now in the press, and is likely to be published in the course of the present year. His opinions on the subject of yellow fever have attracted so much attention in Europe, that the King of Spain ordered a translation of them to be published for the benefit of his subjects in the Spanish language. And the British government likewise caused an edition to be printed, and a copy to be sent for the perusal of all their military and naval physicians.

CORRESPONDENCE.

Philadelphia, April 13, 1805.

SIR,

AT the several times when Dr. Coxé called on me at your request, to obtain information respecting the construction and principles of my improvements on steam engines, I asked him what was the object of your numerous and pointed questions? Does he intend any interference with my invention? He answered, that you were a gentleman, and were making experiments for your amusement; that therefore I need not apprehend any interference. Having received this assurance, I communicated freely, answering all your questions, and explained the principles without reserve, as I have done for twenty-one years past (ever since I first conceived the principles) to every gentleman whom I conversed with on the subject; and when I was informed by Dr. Mitchell, in December or January last, that you intended to comment on the paper which I had laid before each member of Congress individually (which I did not write for publication, nor did I publish it), to show them the difference in principle of the best English steam engines and my own, he then told me that you would treat the subject like a gentleman, therefore I rested so perfectly easy, that I did not peruse your comment until yesterday, three months after its date, when I assure you I was not a little surprised and disappointed to find, that as far as your credit and influence may extend as a scientific character, your comment tends to stigmatize me, to impede the introduction of my improvements, by increasing the doubts in the minds of the people about the principles of my engine, which has been in actual practice, and highly useful operation for three years, far exceeding all others of which I have any knowledge. Although the working cylinder is only six inches in diameter, and length of stroke eighteen inches, she will grind four hundred bushels of plaster in twenty-four hours, or saw two hundred feet of marble stone; and when my principles are fairly and fully put in operation, the work will be doubled, or perhaps trebled.

1. You say I am in pursuit of an ignis fatuus.
2. You indirectly insinuate that I, through design, omit to mention that Captain Savary wrought his engine with strong elastic steam.
3. That I have dexterously assumed to myself a principle for which you obtained a patent two years ago.
4. You attempt to turn my ideas and my further proposed improvements into ridicule.
5. You say I have assumed very erroneous principles in my improvements of my steam engines, as well as my perpetual still.
6. You say that I have exaggerated enormously the strength of my boiler, and endeavour to show that it is incompetent to the task I assign to it.
7. You say that the application of the discoveries made by Dr. Black, twenty years ago, respecting latent heat, and the very important law of increment, developed by certain gentlemen to the improvement of steam engines, was obvious, therefore I can have no well-grounded claim.

Now, Sir, what benefits do you expect to arise from your having laid me under the necessity not only of defending my character, but my interest? Shall we criminate and recriminate each other in public, until we

give good people cause to pronounce us fools? I wish to employ my time to a more useful purpose. To be sure you have greatly lessened the force of your remarks, by informing us, that you have been hard at work for twenty years, and expended twenty thousand dollars, and have not yet derived one shilling from all your various schemes and projects. Surely, Sir, this experience of yours was sufficient to have taught you, that you are not qualified to pass judgment on the works of those who have been successful. It is at least sufficient to convince other people. Can you point out one single instance wherein the man whose work you condemn has failed of success, of bringing into operation and use any thing which he once attempted?

In answer to your charge I might retort on you as follows:

1. You say I am in pursuit of an *ignis fatuus*; but experience has taught me, that many who think themselves wise have said, and will say the same thing, until they either understand the principles, or see them in operation.

2. I was not publishing, but only writing to each individual member of Congress, therefore there was no need of mentioning Captain Savary's application of strong elastic steam in his first attempts; but you have omitted to mention (I will not say through design) that he soon gave it up for want of a true knowledge of the principles which only could direct to a useful application. I was showing the difference of the principles and powers between Watt and Bolton's steam engine (which has long been esteemed the best) and my own, to show how far my principles exceed theirs, as justly to entitle me not only to an exclusive right for using them, &c. but to the fostering aid of Congress, so far as to protect me in the exclusive enjoyment of my improvements on mills for another term, that I might apply the neat proceeds to defray the expenses of extending the use and introduction of my improved steam engine, as well as of the expensive experiments, which will be necessary to put in practice my further proposed improvements, which I have specified; and I do assure you, Sir, you do not show you understand them.

3. Have I been half so dexterous as yourself, who sent Dr. Coxe to view my principles, then in operation and use one year, (publicly exhibited and explained to every one who inquired after the principles) and to put a number of questions to me, which drew an answer, a full explanation of the construction and principles of my invention, and which, when you were in possession of the improvement, became obvious to you, and you went and attempted to take out a patent for, and assumed it to yourself? But herein you have failed for want of a competent knowledge; besides, you are not the original inventor.

4. Do you really believe that the fire of volcanos is kindled by atmospheric air? if you do, please to point out to us the apertures by which it is possible for the air to enter against a force which casts up rocks two thousand feet high, or else show why fuel, which burns in one place without the aid of atmospheric air to kindle it, will not so burn in another place with the aid it has, be that what it may; or why air cannot be substituted instead of that unknown aid in the manner which I have proposed.

5. Are you sure you are competent to assert, that I have assumed very erroneous principles, while you show you do not understand them yourself, or that Mr. Dalton's experiments are more accurate, or the result he has drawn nearer the truth, than those of the Editors of the *Encyclopædia*? That Dalton, as well as yourself, is wrong, is evident, because, if we continue his scale of diminution of the ratio of the increase of elasticity, by the increase of heat, will entirely cease long before the power be sufficiently augmented to burst the cannon, as stated by the Earl of Worcester.

6. Have you any rule for ascertaining the power exerted to burst a boiler, by which you can tell how erroneously I have exaggerated the

strength of my boiler. The rule by which you seem to have calculated is really false, and your calculations are a specimen of your qualifications, as there is, unfortunately for you, no solution of this useful problem to be found in any book that I can find; you must, therefore, have recourse to your own inventive genius, and it was absolutely necessary you should possess this knowledge to enable you to arrange a steam engine.

7. Was it not equally obvious, that a pipe of one inch diameter would expose more surface to the heat of the fire, and bear a greater elastic power of steam, in proportion to its contents, than one of twenty inches diameter? But whoever made a boiler consisting of pipes of one inch only in diameter, to work a steam engine, until it was done by John Stevens, Esq. of Hoboken, excepting only the late ingenious Colonel James Rumsey, about fourteen years ago, in the city of Philadelphia, and afterwards in the city of London? His patent is dated August the sixth, one thousand seven hundred and ninety-one, which will expire the sixth day of August next; he, however, as I have been informed, found it would not do in practice, and therefore gave it up as an *ignis fatuus*. But shall this discovery, or patent of his, make your claim groundless, or prevent you from pursuing the same *ignis fatuus*, for which you took out a patent two years ago? I hope not, or else there could be but few well grounded claims.

Your ignorance of the principles of my invention has caused you thus far to commit and set yourself in the way as an obstacle to the introduction of the most useful improvements ever made in steam engines; but you have one consolation; this will serve more to perpetuate your memory than your twenty years hard work, and twenty thousand dollars risked.

You may rest perfectly easy in the possession of your boiler, as you have specified it; also of your scheme for working one of Watt and Bolton's by the steam of one of my engines after it leaves it. I can produce more effect from the steam by one cylinder than I can by using two. As you propose also your mode of distilling by steam, as described in your comment, I would wish to know when you invented it. But if you will attempt to infringe my patent, the best way will be to decide the matter in a court of law, without troubling the public therewith. I am sorry to be obliged to spend my time thus, as I am engaged in writing for the press, a small treatise on the principles and powers of steam, and of my own improvements, which, when published, many things will become obvious to you that are not so now; but then you can easily show that they were so for twenty years past, because my deductions are all drawn from the experiments, discoveries, reasoning, &c. of Dr. Black, and other philosophers, who have lived and wrote before me.

I might, in the same time thus spent, have discovered or wrote something useful.

To conclude, seeing you have dexterously procured your injurious remarks a place in the Medical Repository, I will thank you to obtain a place in the same work for this letter, or adopt any means you please to place me on as good grounds as you found me, and you will much oblige,

Sir, your humble servant,

OLIVER EVANS.

JOHN STEVENS, Esq. of Hoboken, near New-York.

P. S. After the publication of the above, and you quit all claim to my inventions, I shall consider myself redressed, and shall be willing to correspond with you on friendly terms. We should assist, instead of injuring each other.

If your plan of a boiler should prove useful in practice, and generate more steam, with equal fuel, than mine, I shall rejoice at the improvement, which, united with my improvements, would accomplish the great ends of

propelling boats and land carriages. We need not contend, the range is sufficient for us both; let us unite our resources. If I had possessed the sum to expend twenty years ago that you say you have already expended, I do believe that my inventions and improvements might, at this day, have been doing the daily labour of at least one hundred thousand men in this country.

When the blind man took the lame one on his back, they both travelled safely; but I am as doubtful of the success of your project of a boiler as you are of my volcanic one, and think I could convince you of the great probability of the success of my plan of pouring all the heat of the fire into the water, instead of passing up the chimney, which is all that can be possibly got from the fuel, and would be lighter, and far more durable and easier repaired than yours; but I will not risk the expense of the experiments until there be a better prospect of reward. I have made a small boiler on that principle, which appeared to answer well; all the heat of the fire entered the water to generate steam, which, united with the elastic fluid, generated by the consumption of fuel, found the agent to work the engine.

O. E.

MR. STEVENS' REPLY.

THE only part of the above letter which I consider sufficiently important to require any notice on my part, is the charge Mr. Evans has thought proper to bring forward against me, of sending Dr. Cox to him to steal his invention; for which he is pleased to say, "I have taken out a patent, and assumed it to myself." To repel so odious a charge, it will be necessary to go into a detail much longer than I could wish.

Mr. Evans, in the above letter, admits unequivocally, that he has no claim whatever to the boiler specified in my patent. What, then, is it I have stolen from him? He affects, it seems, to take it for granted, that the idea of using steam at a high temperature and great elasticity, never occurred to me before I obtained information on that head from Dr. Cox. But the following extract from a statement,* presented in Feb. 1791, to the Board of Commissioners appointed to adjust and settle interfering claims for exclusive patent rights, will prove, in the most satisfactory manner, that the idea of the great advantages resulting from using steam of high temperature and great elasticity, had actually occurred to me many years ago; and, I should suppose, even before Mr. Evans had thought of it himself. In describing what I then thought an improvement of the steam engine,

* This statement was drawn up in conformity to the following notification:

Philadelphia, November 23, 1790.

Some of the claims for patents, founded on the supposed discovery of new applications of steam to useful purposes, not having been stated so precisely as to be satisfactory to the Board, and it being their wish to hear all those claims together,

Ordered, That the first Monday of February next be appointed for the hearing of all parties interested; that notice be given to John Fitch, James Rumsey, Nathan Read, Isaac Briggs, and John Stevens, of this order; and that each of them be required to transmit in writing to the Board; a precise statement of their several inventions, and of the extent thereof.

Extract from the Minutes,

HENRY REMSEN, jun. Clerk.

which, at this time, it is unnecessary to explain, I make use of the following words.

"For if, by the intervention of water or oil, we should be enabled to make use of steam of four times, for instance, of the usual strength, the advantages we should derive from it would be very great.

"1. A cylinder of two feet diameter would be as powerful as one of four feet diameter.

"2. There are sufficient grounds to induce us to believe, at least, that less heat is required to raise steam from the strength of one atmosphere to two than was necessary at first to raise it to one; or, in other words, if we add to steam as much more heat as it may already contain, we shall make it more than twice as elastic."

Here, then, we find that the advantages of using strong steam were suggested and pointed out by me before I heard, or, indeed, could have heard of Mr. Belancour's experiments.* But after it had been satisfactorily proved by these experiments, that the increase of the elasticity of steam was in a far greater ratio than the increase of heat, it could not be imagined that I should have remained insensible of the immense importance of the application of this principle to the improvement of the steam engine. The truth is, that ever since the period above mentioned, I have been more or less engaged in various projects for applying this principle to advantage. To enumerate and describe the boilers I have constructed on different plans, with a view to effect this object in the most convenient and eligible mode, would be tedious and unnecessary, more especially as Mr. Evans does not seem disposed to dispute the right of invention of any specific improvement of the steam engine; but, generally, the exclusive right of applying to this purpose the above mentioned principle.

But were we even to admit that Mr. Evans was really the original discoverer of this all-powerful principle, he would, I apprehend, even in this case, find it impracticable to secure against infringement a claim of exclusive right to the application of it. How, I would ask him, could he prevent me or any other man from loading at pleasure the safety valve, a practice coeval with the first invention of the steam engine itself? Capt. Savary's engines were capable of raising water from 100 to 200 feet high; consequently he was in the habit of loading his safety valve with 50 to 100 lb. on the square inch.

And now, I hope, I have done with Mr. Evans. Nothing less than the necessity of vindicating myself against the foul aspersion he has thought proper to bring forward against me, could have induced me to have set my pen to paper. I still, however, entertain the most favourable opinion of Mr. Evans' candour and integrity, and am disposed to think, that, when his passion shall have subsided, he will sincerely regret the gross abuse he has bestowed on me; and probably the time is not far distant, when he will be convinced of the truth and justness of the remarks I have taken the liberty of making on his various projects, and the angry strain of invective which he now indulges himself in, will ultimately give place to grateful acknowledgments for the services I have rendered him.

The world are greatly indebted to Mr. Evans for his ingenious improvements of mill-machinery; and I sincerely hope, that his distinguished mechanical abilities may still continue to be exerted in a way best calculated to promote his own individual interest, and, at the same time, render essential benefits to the community at large.

* These experiments were made in Paris, in 1790, and were never heard of by me until they appeared in the new edition of the *Encyclopædia Britannica*.